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Logic and Philosophy of Language

Edited by
Roy W. Perrett



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Roy W. Perrett
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Series Preface

No anthologist succeeds in including everyone's favorites, so a few words about the principles of selection seem appropriate. Firstly, as with other volumes in this Garland series, priority has been given to journal articles, rather than book chapters. However, some essential book chapters have been included, and the introductions to each volume include references to significant books. Readers in search of further bibliographical assistance should consult what is now the standard source: Karl H. Potter, *Bibliography of Indian Philosophies*, 3rd rev. ed. (Delhi: Motilal Banarsidass, 1995), and the on-line updates to it available at the "Indian Philosophy Bibliography" (http://faculty.washington.edu/kpotter/). Secondly, the emphasis throughout is on *philosophical* studies of Indian philosophy. Consequently, much excellent historical and philological work has been omitted. Thirdly, the desire to make Indian philosophy accessible to interested Western philosophers has meant not only that all the selections are in English, but also that most of them use a minimal amount of unglossed Sanskrit terminology. This restriction has prevented the inclusion of more work by Indian authors.

Finally, I would like to acnowledge gratefully all the good advice and generous assistance I have received from Chakravarthi Ram-Prasad, Mark Siderits, and (most especially) Stephen Phillips. The blame for any shortcomings that may remain rests, of course, solely upon my own shoulders.

Series Introduction

The five volumes of this series collect together some of the most significant modern contributions to the study of Indian philosophy. Indian philosophy is one of the great philosophical traditions of the world. Unfortunately, however, its philosophical riches are not always as readily accessible to Western philosophers as might be desired. The selections in these volumes help to redress this situation by giving readers easy access to some of the best philosophical work in the area, including material that is often difficult to locate.

Collectively the selections in these volumes explore many of the important commonalities and differences between the Indian and Western philosophical traditions. These similarities and differences are philosophically pregnant. There is enough in common between Indian and Western philosophy to suggest that the philosophers in both traditions are often engaged with similar problems and hence should be able to communicate with each other. However, there are also sufficient differences between the traditions to suggest that they may have some novel perspectives to offer each other.

In choosing the selections for this series priority has been given to journal articles, rather than book chapters. However, some essential book chapters have been included, and the introductions to each volume include references to significant books. The emphasis throughout is on *philosophical* studies of Indian philosophy. The desire to make Indian philosophy accessible to interested Western philosophers has meant not only that all the selections are in English, but also that most of them use a minimal amount of unglossed Sanskrit terminology.

Volume 1: Epistemology is concerned with the nature and scope of Indian *pramāna* theory, i.e. that part of Indian philosophy concerned with the nature and sources of knowledge. Indian philosophers developed a causal theory of knowledge and acknowledged the existence of a number of valid ways of knowing, including perception, inference and testimony. The Indian *pramāṇa* theorists thus discussed many issues that have also occupied Western epistemologists, often offering importantly different perspectives on these

matters. They also sometimes addressed various interesting questions about knowledge that are unfamiliar to Western epistemologists.

The selections in this volume discuss Indian treatments of epistemological topics like the means of knowledge, realism and anti-realism, truth, knowledge of knowledge, illusion and perceptual error, knowability, testimony, scepticism and doubt.

Volume 2: Logic and Philosophy of Language is concerned with those parts of Indian *pramå~a* theory that Western philosophers would count as logic and philosophy of language. Indian philosophers and linguists were much concerned with philosophical issues to do with language, especially with theories of meaning, while the Indian logicians developed both a formalised canonical inference schema and a theory of fallacies. The logic of the standard Indian inferential model is deductive, but the premises are arrived at inductively. The later Navya-Nyåya logicians went on to develop too a powerful technical language, an intentional logic of cognitions, which became the language of all serious discourse in India.

The selections in this volume discuss Indian treatments of topics in logic and the philosophy of language like the nature of inference, negation, necessity, counterfactual reasoning, many-valued logics, theory of meaning, reference and existence, compositionality and contextualism, the sense-reference distinction, and the nature of the signification relation.

Volume 3: Metaphysics is concerned with the complement to *pramå~a* theory, i.e. *prameya* theory. Whereas the *pramå~as* are the means of knowledge, the *prameyas* are the knowables, cognisable entities that constitute the world. With respect to the number and kinds of such entities, there was a very wide variety of opinion among classical Indian philosophers — including variants of monism, dualism and pluralism about both entities and kinds. Many metaphysical topics were debated, but two of the most important were causation and the nature of the self. The competing theories offered about these two issues also raised other questions about the metaphysics of wholes and parts, substances and properties, and universals and particulars.

The selections in this volume discuss Indian treatments of topics in metaphysics like ontology, constructionalism, universals, negative facts, mereology, causation, relations, freedom and determinism, and theories of the self.

Volume 4: Philosophy of Religion is concerned with something that can be described as "Indian philosophy of religion," i.e. "philosophy of Indian religions." Contrary to popular Western belief, classical Indian philosophy was not indistinguishable from Indian religion — as even a cursory glance at the first three volumes of this series will demonstrate. Religious concerns, though, did motivate the work of many Indian philosophers. However, important differences between the major Western religions and the major Indian religions (Hinduism, Buddhism, Jainism) mean that the shape of Indian philosophy of religion is often significantly different from that of Western philosophy of religion.

The selections in this volume discuss Indian treatments of topics in the philosophy of religion like the problem of evil, God, theological monism and dualism, atheism, the concept of a perfect being, reason and revelation, rebirth and karma, religious language, religion and politics, ritual and *mantra*, and the religious determinants of metaphysics.

Volume 5: Theory of Value is concerned with Indian discussions in the areas of ethics, politics and aesthetics. The Indian philosophers had a good deal to say about the theory of value as they vigorously discussed topics like the ends of life and the relation of virtuous action to those ends. A traditional Hindu classification recognises four classes of values: *dharma* (morality, virtue), *artha* (wealth, power), *kāma* (pleasure), and *mokṣa* (liberation). *Mokṣa* is usually held to be the highest value and is extensively discussed in the paradigm Indian philosophical texts. Indian political and legal theory is concerned with the values of *artha* and *dharma*. Aesthetic pleasure is one of the subject matters of a developed body of writing on aesthetic theory. *Rasa* ("flavor"), the special feeling or enjoyment that pervades an artwork or is aroused in its contemplator, is commonly seen as detached from the aims and concerns of ordinary life, with some even suggesting that it provides a foretaste of the bliss of *mokṣa*.

The selections in this volume discuss Indian treatments of topics in the theory of value like the proper ends of life, the relation of *dharma* and *mokṣa*, liberation and pleasure, the sources of our knowledge of right and wrong, the ethics of non-violence, the status of the supra-moral, egoism and altruism, the theory of *rasa*, aesthetic experience and catharsis.

Volume Introduction

Classical Indian *pramāṇa* theory includes not only what Western philosophers would count as epistemology, but also much that they would count as logic and philosophy of language. This is because almost all Indian philosophers recognized inference (*anumāna*) as an independent source of knowledge, and many Indian philosophers recognized testimony (*śabda*) as a special kind of word-generated knowledge.

The history of Indian logic can be roughly divided into three periods (Vidyabhusana 1978): the ancient period (650 BCE–100 CE), dominated by the *Nyāyasūtra* and its commentaries; the medieval period (up to 1200 CE), dominated by the Buddhist logicians Dignāga and Dharmakīrti; and the modern period (from 900 CE), dominated by Gaṅgeśa and the school of Navya-Nyāya, or "New Logic". Since the origins of Indian logic were in the ancient traditions of public debate (Matilal 1985, 1998), there are accordingly two distinct, though intertwined, parts to its development. One part (on which there is a very large literature) is to do with the search for a satisfactory model of inference and the consequent emergence of a formalized canonical inference schema. The other part is more to do with dialectics (Solomon 1976), and includes a concern with the nature of fallacies (*hetvābhāsa*). Both parts are evident in Gautama's *Nyāyasūtra* (second century CE), the foundational text for the development of ancient Indian logic.

Gautama identifies and systematizes a form of inferential argument used in debate (Potter 1977, Chakrabarti 1977). He defines an inference as having five parts: the proposition (*pratijñā*); the ground or reason (*hetu*); the corroboration (*dṛṣṭanta*); the application (*upanaya*); and the conclusion (*nigamana*). The stock example is:

Proposition (*pratijñā*): The mountain has fire.

Ground or reason (*hetu*): Because it has smoke.

Corroboration (*dṛṣṭanta*): Whatever has smoke has fire, like a kitchen.

Application (*upanaya*): This mountain has smoke.

Conclusion (*nigamana*): Therefore this mountain has fire.

The Buddhists and others argued that this schema includes redundant elements, but over the centuries Nyāya steadfastly insisted that all five parts are necessary for an argument used to convince others. The logic is deductive, but the premises are arrived at inductively. Crucial to this schema (which some scholars have called the Indian "syllogism") is the notion of the inference-warranting pervasion relation (*vyāpti*) appealed to in the third premise. Naiyāyikas are fallibilists about our

knowledge of pervasions and hence inferential reasoning is defeasible, i.e. reasoning based on an assumption of a *vyāpti* can in principle be defeated.

The *Nyāyasūtra* also contains a list of five classes of fallacious reasons (*hetvābhāsa*), all of which fail to possess all the characteristics of the true reason (*hetu*), plus warnings about various kinds of debating tricks. The classes of five fallacies were elaborated upon by later commentators (Saha 1987), but as Indian logic developed much more attention was given to the formalization of the canonical inference.

Medieval Indian logic was dominated by the Buddhist logicians Dignāga and Dharmakīrti, though there were also important contributions made by the Jainas. Dignāga (5th century) built upon and systematized earlier Buddhist work in logic, setting out the framework within which later Buddhist thinkers addressed questions of inference and debate (Chi 1984, Matilal and Evans 1986, Hayes 1988, Matilal 1998). The Buddhist formalization of the standard inference schema is simpler than the Nyâya version:

Thesis (*pakṣa*): *p* has *S*.
Reason (*hetu*): *p* has *H*.
Pervasion (*vyāpti*): Whatever has *H* has *S*.

(Where *p* is the *pakṣa* or subject of the inference, *S* is the *sādhya* or property that qualifies *p*, and *H* is the *hetu* or that other property which is related in an appropriate way to *S*.)

Dignāga made three major contributions. First, he centered his account of inference around the distinction between inference for oneself (*svārthānumāna*) and inference for others (*parārthānumāna*). Second, he more precisely formalized the requirement that the *hetu* of a satisfactory inference must satisfy three conditions (*trairūpyahetu*): (i) it should occur in the case under consideration; (ii) it should be present in a similar case; and (iii) it should not be present in any dissimilar case. Pervasion is then defined in terms of the last two of these three conditions. Third, he devised his "wheel of reasons" (*hetucakra*), a matrix to classify pseudo-reasons in terms of the last two forms of the *trairūpyahetu*.

Dharmakīrti (7th century) built upon Dignāga's work, introducing two particularly important innovations (Stcherbatsky 1962, Matilal and Evans 1986, Hayes and Gillon 1991, Matilal 1998). First, he claimed that there is a kind of necessity to the *vyāpti* relation, a necessity that is grounded either in causation or in identity. Second, he brought within the scope of inference knowledge of absences, or negative facts.

The modern period of Indian logic is the period of Navya-Nyāya (Ingalls 1951, Geokoop 1967, Matilal 1968, Guha 1979, Potter and Bhattacharyya 1992, Wada 1990, Phillips 1995, Matilal 1998). The most influential work of this school is certainly Gaṅgeśa's prodigious *Tattvacintāmaṇi* (14th century). The next most eminent Navya-Naiyāyika is Raghunātha Śiromaṇi (16th century), who further refined the analytical tools of Navya-Nyāya and introduced a number of ontological innovations. The Navya-Nyāya philosophers developed a powerful technical language which became the language of all serious discourse, an intentional logic of cognitions (*jñāna*) increasingly construed by most Indian philosophers as being independent of the realist metaphysics of Nyāya-Vaiśeṣika.

Indian philosophical concerns with language were very much connected with the early development of Sanskrit linguistics (Staal 1988, Bronkhorst 1986, Matilal 1990,

Coward and Raja 1990). Indeed, the Sanskrit grammar of Pāṇini (c.350 BCE) became a paradigm for Indian philosophers in a way comparable to the way Euclid became one for Western philosophers. Accordingly some of the concerns of classical Indian philosophy of language are closely wedded to the peculiarities of the Sanskrit language. But Indian philosophers (and linguists) also concerned themselves with more general issues, particularly theories of meaning (Raja 1969, Deshpande 1992, Houben 1997, Ganeri 1999). The very different metaphysical commitments of the different Indian philosophers meant that they espoused a wide range of views on topics like reference and existence, the relations between word meaning and sentence meaning, literal and metaphorical meaning, and the nature of the signification relation.

The selections in this volume begin with a useful introduction to Indian logic by Hamblin, emphasizing its original twofold nature as a theory of fallacies as well as a theory of inference. The earliest Western scholars of Indian logic, however, were much more concerned with the Indian "syllogism", often misattributing its development to an early Greek influence. The piece by Randle tries to present the Indian inference schema in a broadly "syllogistic" fashion, though Randle is also careful to note various important differences between Indian and Western logic and the limitations of the syllogistic parallels. Staal's article on the concept of *pakṣa* in Indian logic emphasizes how misleading it can be to conflate the *pakṣa* of an Indian inference with the minor term in a Western syllogism and stresses that in Indian logic an entity is never regarded in isolation, but always as occurring in a locus. Staal's succeeding article clearly demonstrates that the law of contradiction was widely accepted by Indian philosophers. He also discusses two types of negation recognized and analyzed in Mīmāṃsā in connection with the logic of injunctions.

The article by Gillon and Love presents Buddhist logic through a detailed analysis of the structure of argumentation illustrated and sometimes described in a sixth century manual, Śaṅkarasvāmin's *Nyāyapraveśa*. Gillon and Love thereby attempt both to exhibit a new approach to Indian logic and to provide a rudimentary exposition of it, conceiving of their task as analogous to a linguist's articulation of the structure of a language of which she is not a native speaker. The result is a multi-levelled account which utilizes analytical tools drawn from mathematical logic, linguistics and game theory.

The rich tradition of Navya-Nyāya is represented here by two selections. Bhattacharyya's article on the technical language of Navya-Nyāya provides detailed accounts of some of the key notions in terms of which all cognized structures are to be analyzed and rigorously described (see also Bhattacharyya 1987). One of the special features of Navya-Nyāya is their complex account of four types of negation (Matilal 1968), and the article by Shaw is a detailed discussion of the corresponding sixteen types of double negation recognized in their system.

The controversial question of what sort of necessity the Indian logicians implicitly recognized is addressed by the next three selections. Indian inferences rest on an inductive general premise (the *vyāpti*) and the Western notions of formal validity and logical necessity do not seem to be present in Indian logic. Some scholars have suggested that the Indian recognition of logical principles like the laws of contradiction and excluded middle is evidence for the presence of the concept of logical truths or

necessity (Matilal 1982). Sibajiban's paper takes a different tack, arguing in effect that we can find in Indian logic the notion of an inference schema whose instances would all be valid inferences. Just as the knowledge of the specific nature of the middle term is unnecessary for a Western syllogistic inference, so too is the specificity of the *hetu* unnecessary for an Indian inference. All we need is a term with which the *sādhya* ("major term") is invariably co-present. But then we have either an a priori inference rule, or a purely formal schema whose every substitution instance is a valid schema.

Mohanty favors a different approach to the matter, reminding us that Indian logic is a logic of cognitions (*jñāna*), not of propositions. Hence it is not concerned with the compatibility or incompatibility of propositions, but rather with the compatibility or incompatibility of awareness episodes in virtue of their contents (see also Mohanty 1992). This explains the Indians' lack of interest in purely formal necessities. What the Indian logicians offer us instead is a challenging theory of inference that is both a logic and a psychology of inference, without being psychologistic in any pejorative sense.

Yet another approach is to find evidence for an Indian sensitivity to logical possibility and logical necessity in their use of *tarka*, a concept discussed in Davis' article. *Tarka* in Indian logic is a subjunctive conditional of the form "If *p*, then *q*", where *p* and *q* are both false (Bagchi 1953, Chakrabarti 1992). Such conditionals are frequently utilized by Indian philosophers in *reductio*-type arguments. But for the implicit *modus tollens* to work, the Indians presumably required too some conception of a connection between two unrealized (logical) possibilities.

Something of the Jaina tradition of logic is introduced by Matilal's piece on *anekānta* (see also Matilal 1981). The Jaina logicians made many important contributions to the development of Indian logic, especially during the medieval period. Their most famous logical doctrine is the sevenfold predication (*sapta-bhaṅgī*), according to which no predicates can be absolutely true of an object. This in turn reflects their metaphysical relativism (*anekānta* or *syāvāda*), which the Jainas staunchly defended against charges of irrationality and incoherence.

An excellent overview of Indian concerns with language is provided by Staal's wide-ranging survey, which discusses the contributions of both grammarians and philosophers. Brough's seminal article discusses the details of some Indian theories of meaning, including competing views about the relation of word meaning and sentence meaning, and about literal and metaphorical meaning (see also Raja 1969, Murti 1974).

Matilal's piece on reference and existence introduces an important debate between Nyāya and the Buddhists about the "riddle of non-being" (Siderits 1991, Chakrabarti 1997). The Nyāya realists treat sentences involving empty referring terms as complex, and their simple parts as standing for real elements. Sentences like "The rabbit horn does not exist", which apparently refer to non-existent entities, are translated into sentences like "There is no relation between the rabbit and a horn", which refer only to entities that are

reals according to Nyāya metaphysics. The Buddhists, committed to the momentariness of all existents, favor instead a "pan-fictional" approach which allows that the unreal entities of non-referring expressions can also be the objects of cognitions.

The article by Matilal and Sen intriguingly connects some Indian debates about the relations between word meaning and sentence meaning with some modern Western debates about contextualism, compositionality and meaning (see also Siderits 1991, Mohanty 1992). They argue that some of the philosophical issues raised by Frege's context principle were similar to the issues raised by the controversy between the Bhāṭṭa and Prābhākara Mimāṃsakas about how we grasp the meaning of a sentence.

Siderits' paper on the sense-reference distinction in Indian philosophy of language begins from the received opinion that the Indians did not posit sense as a component of the meaning of an expression in addition to reference. However, Siderits goes on to argue that their commitment to semantic realism forces upon philosophers as different as Dharmakirti and the Prābhākaras a recognition of something sense-like, and that from them we learn something important about the motivation for the sense-reference distinction.

The Herzbergers' paper discusses some themes in the Grammarian philosopher Bhartṛhari (Houben 1995). "Bhartr.hari's Paradox" is generated by the problem of how to state the unnameability thesis (i.e. the thesis that there are some things which are unnameable). The paradox is that any positive instance of the thesis that might be offered as verifying it seems to involve naming what is declared to be unnameable. The Herzbergers offer some arguments of their own for the unnameability thesis, but each of these arguments also turns out to paradoxically undercut its own conclusion. If we accept that no relation can be one of its own relata, then not only is the inherence relation unnameable, but the significance relation is unsignifiable and the denoting relation undenotable.

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The Indian Tradition

Despite large and obvious differences, the history of Indian Logic runs curiously parallel with that of the Logic of Europe, at least in its classical and medieval periods; so much so that one is tempted to see the two as advancing side by side, rather than separately. So far as the classical period is concerned we may, in fact, have tended to underestimate the extent of the contact between India and Greece; for though no one now maintains, as some historians have argued,[1] that Indian Logic was directly inspired by Aristotle, or even that influences in either direction can be definitely traced, it is known that there was considerable commerce between the two regions. Aristotle's most famous pupil Alexander had, after all, penetrated to India in the course of his military ventures, though it is doubtful that he found time to lecture the inhabitants on Logic. There were subsequently Greek settlements on the north-west frontier, and it would be surprising if there were not some interpenetration of ideas. Later, with the rise of Mohammedanism, these ties were broken, and India and Europe were held apart by a civilization largely hostile to both. The Arabs, it is true, helped to preserve the European tradition to some extent by taking over Aristotle's works in translation; but they did not themselves discover the Indian Logic and, in fact, the Moslem invasion of India nearly caused its extinction. Many of our modern Sanskrit texts are re-translations from versions that survived in Tibet. We can also study such doctrines as went with Buddhism to China.

The actual authors of the earliest Indian treatises are dim,

[1] Vidyābhūṣaṇa, *A History of Indian Logic*, Appendix B.

shadowy figures and it is difficult to date their works even approximately. The most important text, the *Nyāya sūtra* (to a sufficient approximation the name means just 'Logic Book'), was supposedly written by one Gautama or Akśapeda (two persons or one?) at some time during the first three centuries A.D.; but it could be a compilation, and one part of it, the fifth book, which will occupy us later, has some parallel in the work of the physician Caraka, who is placed about A.D. 70. It is quite short – about 12,000 words altogether in English translation – and aphoristic in style, to the extent that it needs to be accompanied by a detailed commentary. A commentary by Vātsyāyana (5th–6th century?), author also of the *Kama sūtra*, is very often printed with it.[1]

Before considering what Gautama and Vātsyāyana say about Fallacies it is necessary to sketch their theory of inference. This betrays a 'dialectical' origin almost as strongly as Aristotle's *Topics*. A single pattern of inference is given, without moods or figures. An inference has five members. Illustrated by the stock example of later writers, they are:

(1) (Thesis): 'The hill is fiery.'
(2) (Reason): 'Because it has smoke.'
(3) (Example): 'Whatever is smoky is fiery, like a kitchen.'
(4) (Application): 'And this hill is smoky.'
(5) (Conclusion): 'Therefore it is fiery.'

Since Gautama calls (3) just 'Example', it seems likely that, in the illustration, the statement of a general rule, 'Whatever is smoky is fiery', is a later importation: the original idea is simply that an example of the operation of the (unstated) connection between the major term 'fire' and middle term 'smoke' should be given. If this seems strange, comparison with Aristotle *Rhetoric* (1393a 22–1394a 18) might be helpful. In general the aim of this theory of inference is much closer to Aristotle's aim in his *Rhetoric* than it is to what we are used to and which derives from the *Prior Analytics*. Gautama defines an 'example' as a 'case in which the

[1] I have used mainly *Gautama's Nyāyasūtras*, in the Jhā edition, which also contains Vātsyāyana's commentary; and have supplemented it with some of the extracts given in Bocheński, *A History of Formal Logic*. I have altered terms here and there where it was necessary to bring the translations into correspondence; on the whole preferring Jhā.

common man and the expert agree': in this case there is some resemblance to Aristotle's definition of dialectical or examination arguments.[1]

The apparently useless repetitive character of (4) and (5) led to their being dropped by some later writers. Their presence is less surprising, however, if the whole inference scheme is seen as a *pro forma* for the setting-out of inferences in practice, with an aim of securing comprehension in an audience or persuasion of an opponent. Here it is interesting that we are told by Vātsyāyana in his commentary that others raised the number of members of the syllogism to ten, by adding the 'desire to know', 'doubt', 'belief in possibility of solution', 'purpose in view in attaining the conclusion' and 'removal of doubt'. If these are interleaved with the other five we have the pattern of a veritable dialogue, in which the added members represent the reactions or contributions of a second participant. We could dramatize the situation something as follows:

A: The hill is fiery. (*Thesis*)
B: Why? (*Desire to know*)
A: Because it is smoky. (*Reason*)
B: Does that follow? (*Doubt*)
A: As in the case of a kitchen. (*Example*)
B: Oh, I begin to see! (*Belief in possibility of a solution*)
A: And, you see, this hill is smoky. (*Application*)
B: Now we are getting somewhere. (*Purpose in view in attaining the conclusion*)
A: So the hill is fiery. (*Conclusion*)
B: Of course! (*Removal of doubt*).

The scheme is artificial at some points, as witness the vapidity of the remarks I have had to write in for the second speaker. However, there can now be little doubt that Gautama's scheme is aimed at representing the *presentation of an argument to others*; that is, at Rhetoric or Dialectic, not pure Logic.

A number of writers from the fifth and sixth centuries made a

[1] *Sophistical Refutations*, 165b 4. Roger Bacon produces a startlingly similar phrase in defining dialectical probability: 'The probable is that which seems the case to everyone, and about which neither the crowd nor the wise hold a contrary opinion': *Sumule dialectices*, p. 313.

distinction between *svārtha*, 'inference for oneself', and *parārtha*, 'inference for others', the former being possibly non-verbal. The distinction passed into the Indian logical tradition, which only much later, and then incompletely, developed a 'pure' Logic with a detachment from practical application, of the kind that has been dominant in the West.

The apparently repetitive character of the fourth and fifth members of Gautama's syllogism has been justified in another way. A tenth-century logician, Vācaspati Miśra, wrote[1]

> The *Conclusion* thus is not the same as the *Thesis:* the latter puts forward the fact only tentatively, as requiring confirmation by the reasoning with the aid of the *Reason* and the *Example,* while the former puts it forward as one fully established, and thus precluding the possibility of the truth being contrary to it. This cannot be done by the *Thesis*; as, if it did, then the rest of the members would be entirely futile.

Is a tentative thesis of the same 'form' as an established conclusion? Jhā sees their identification as the source of the paradox that every syllogism is question-begging, and the distinction between them as resolving it.

Turning now to fallacies, it will be enough to discuss, first, the treatment given by Gautama in the *Nyāya sūtra* and, second, the gradual change that took place in the tradition thereafter.

Gautama refers his fallacies to the 'reason', or second member of his syllogism. Vātsyāyana says that fallacious reasons 'are so called because they do not possess all the characteristics of the true reason, and yet they are sufficiently similar to the true reason to appear as such'. Gautama briefly and without detail or justification lists five classes of them. (1) First, a reason may be 'erratic' or 'inconclusive': Vātsyāyana's example is 'Sound is eternal because it is intangible', where in fact some intangible things are eternal and some not. (2) A reason may be 'contradictory' if it is in contradiction to something the proponent has already accepted or is known to hold. Vātsyāyana gives the example of two Yoga doctrines 'The world ceases from manifestation, because it is non-eternal', and 'The world continues to exist, because it cannot be utterly destroyed': these cannot both be right, and

[1] Quoted by Jhā, *Gautama's Nyāyasūtras*, p. 72, from the *Tātparya.*

once the first is accepted the second is fallacious, since its reason contradicts the earlier reason. (3) A reason may be 'neutralized' if, instead of leading to a decision about the thesis, it leaves matters undecided. It may do this because it is actually only a repetition of the thesis, and Vātsyāyana's example (p. 90) is 'Sound is non-eternal because we do not find in it the properties of the eternal thing'. (4) A reason may be 'unknown' or 'unproved'. 'Shadow is a substance, because it has motion' is of this character, says Vātsyāyana (p. 92), because it is not known whether a shadow has motion: 'Does the shadow move, like the man? or is it that as the object obstructing the light moves along, there is a continuity of the obstruction . . . ?' (5) Finally, a reason may be 'inopportune' or 'mistimed'. What Gautama means by this it is impossible to guess, but if commentators are to be believed it could be something to do with the fact that thesis and reason, as tensed statements, are true one at one time and one at another but not both together, as with Boethius's Fallacy of Different Time. Alternatively it could be just that the members of the syllogism are in the wrong order and, perhaps, that the thesis proves the reason rather than vice versa.

This list of five classes of fallacy formed the basis of various elaborated classifications of later writers, much in the way Aristotle's list did in Europe. If we suspend consideration of the impenetrable fifth one they are all, in a broad sense, 'formal': either the never-stated major premiss, the rule that is needed to justify the passage from reason to thesis, is false, or it is tautological, or the reason itself is unproved or elsewhere contradicted. It is true that some of the objections would not have been classified as 'formal' in the sense required in the West and which derives from Aristotle's *Prior Analytics*: the first class would be simply a case of false (suppressed) premiss, the second would be a case of a possibly-valid inference open to objection *ad hominem*, and the other two would be varieties of question-begging. None of them, however, involve variations in the meanings of words or phrases as in Aristotle's Fallacies Dependent on Language, and the kinds of dialectical irregularity that are involved are of a kind that can easily be provided with a formal analysis.

The *Nyāya sūtra*, however, also has a good deal to say about other kinds of logical fault or error. The section on fallacies

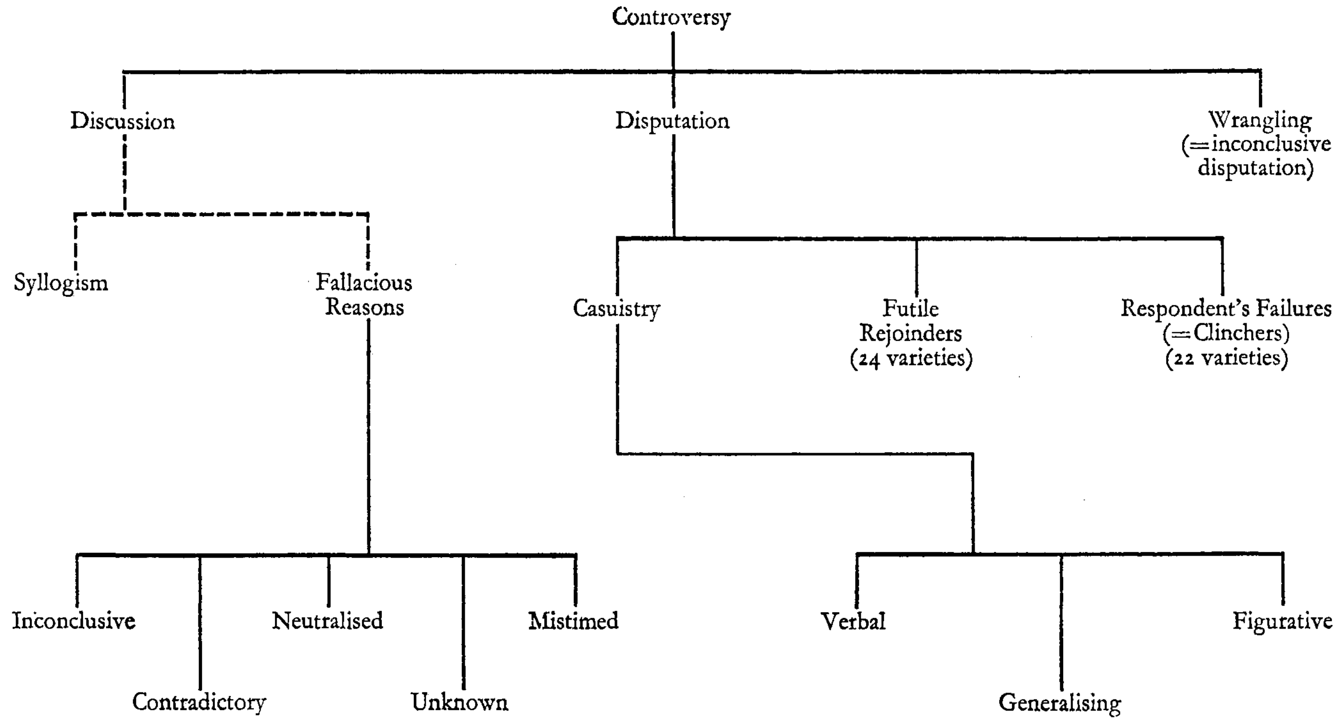
had started out with a definition of three kinds of 'controversy'; namely, (1) Discussion, which is (p. 80) 'the putting forward (by two persons) of a conception and counter-conception, in which there is supporting and condemning by means of proofs and reasonings . . . carried on in full accordance with the method of reasoning through the five members'; (2) Disputation, which is discussion 'in which there is supporting and condemning by means of Casuistry, Futile Rejoinders and Clinchers'; and (3) Wrangling, which is disputation that is inconclusive. From the order of treatment it appears that the fallacies we have so far been discussing are such as occur primarily in the first of these three kinds of controversy and, though to be condemned, are of a lesser order of evil than what follows. Disputation and Wrangling, we are told, may be employed to keep up our zeal for truth 'just as fences of thorny boughs are used to safeguard the growth of seeds', and are of use against people who will themselves not argue properly.

Casuistry is of three kinds, of which the first is no more nor less than Equivocation, though the examples that Vātsyāyana gives of it make it equivocation of a particularly trivial kind: the word *nava* means alternatively 'new' or 'nine', and when someone says 'That boy has a new blanket' the casuist says 'No, not nine blankets, only one'. He goes on, however, to mention the circumstantial ambiguity of words, with examples like those of Sextus (p. 98):

> . . . when such expressions are used as – 'take the *goat* to the village,' 'bring *butter*', 'feed the *Brāhmaṇa*' – every one of these words ('goat', 'butter' and 'brāhmaṇa') is a general or common term and yet it is applied, in actual usage, to particular individuals composing what is denoted by that term; and to what particular individuals it is applied is determined by the force of circumstances; . . .

The casuist can put the wrong *denotation* on a word, and this is to be regarded as equivocation also.

The second kind of Casuistry is 'Generalising Casuistry', which consists in taking a speaker's words more generally than he intended them, and is slightly reminiscent of *Secundum Quid.* Someone who says 'Learning and character are quite natural to a *Brāhmaṇa*, does not necessarily intend 'delinquent' *Brāhmaṇas*,



The Nyāya sūtra's *Classification of Controversy*

those who have not gone through all the rites and ceremonies, to be included and it will be casuistical to take him as doing so. The third kind of Casuistry is 'Figurative Casuistry' which consists in shifting the primary meaning of an opponent's words. Vātsyāyana discusses in some detail the difference between the first and the third.

What Jhā translates as 'Futile Rejoinders' and 'Clinchers' are dealt with in the *Nyāya sūtra*'s last, fifth book which has sometimes been regarded – on what evidence I do not know – as written independently of the rest. This part of the book has had a bad press, for reasons we shall explore in a moment; but its aim has clearly been misunderstood, and we shall find a syndrome that is by now familiar from our study of the fate of the early Aristotle. The list (pp. 502 ff.) of twenty-four 'Futile Rejoinders' – the translation seems a little exotic, since the Sanskrit word is just *jāti* – is a list of ways in which a piece of syllogistic reasoning may be 'equalized': that is, of ways in which an opponent may bring arguments that balance or neutralize the original reasoning without challenging it on its own ground, in the way the author would consider proper. The twenty-two 'Clinchers' (pp. 540 ff.) – the word is *nigrahasthāna* which has sometimes been translated 'Respondent's Failures' are ways in which the *proponent* of a thesis can spoil his case with dialectical shortcomings. The two lists can be seen as complementary if we imagine them as a manual of debating tactics, and as setting out possible dialectical faults of the opponent and proponent, respectively, in a debate. Stcherbatsky, in his well-known book on Buddhist Logic, does not mention the first list at all but says of the second[1]

> The Manual on the Respondent's Failures was evidently a manual for the judge, its composition the result of a long experience in the practice of the art of debating, which resulted in the establishment of a system of type-instances and laws regulating the debate.

The term 'respondent', borrowed from the Western tradition, presupposes a question-and-answer form of debate which may or may not have been usual; and there is no direct reference in Gautama or Vātsyāyana to a 'judge'. Nevertheless this properly represents the tone of the fifth book.

[1] Stcherbatsky, *Buddhist Logic*, p. 340.

The 'Futile Rejoinders', necessarily too briefly described to do them full justice, and with the omission of a few which are obscure or repetitious, are as follows:

[1 and 2] argument for a contrary of the thesis (i.e. without destroying the original one),
[3] arguing that the example proves other things as well,
[4] arguing that the subject of the thesis lacks some properties of the example,
[5 and 6] arguing that the property in question is uncertain in the example, or less certain than in the subject,
[7] arguing that the example is contingent,
[8] presenting the example as equally well to be proved from the thesis (i.e. the claim that the example begs the question),
[9 and 10] arguing that the reason is 'united with' the thesis, and cannot prove it; or that it is unconnected with it, and cannot prove it,
[11] arguing that the reason is itself in need of proof,
[14] independently throwing doubt on the thesis,
[17] arguing by *reductio ad absurdum*, on the presumption of consequences the proponent might not grant,
[18] objecting generally to the method of argument by example,
[20] arguing that the thesis is in fact known to be false,
[21] (perhaps) arguing that the thesis is not known not to be false.

It will be seen that even arguments quite good in themselves, as in [1] and [2] and, above all, [20]!, are regarded as 'futile' when they come *in answer to* the original reasoning. This does not mean, presumably, that the opponent should not put them forward but only that, in neutralizing the original reasoning, they are themselves neutralized as well. It is not the opponent's job to establish a counter-thesis at all.

'Clinchers' or 'Respondent's Failures' are easier to summarize: the following list partly follows Stcherbatsky. The proponent of an argument *may* be criticized for:

[1] annihilating his own thesis by an unsuitable example,

[2] shifting to another thesis,
[3] giving a reason that contradicts the thesis,
[4] abandoning the thesis,
[5] changing the reason originally given,
[6] irrelevancy,
[7] giving meaningless sounds as a reason,
[8] giving an assertion that is unintelligible even though stated three times,
[9] giving a syllogism such that there is no connection between the members,
[10] stating the members in the wrong order,
[11, 12] reasoning that is incomplete, or redundant,
[13] repetition,
[14, 15] failure to restate, or understand, opponent's objection,
[16] admission of ignorance,
[17] breaking off the debate (thus conceding defeat),
[18] admission of a flaw in his reasoning,
[19, 20] neglecting to rebuke the opponent when necessary, or doing so when not necessary,
[21] irregular discussion.
[22] fallacious logical reasons.

Only a few comments need be made on these lists, which reveal a preoccupation with orderly debate as strong as anything in Aristotle. The first concerns item [22] of the second list, whose inclusion is quite out of place with the classification-scheme suggested earlier by Gautama and is perhaps evidence of separate origin, though it could as easily be due to a conflict between two conceptions in the mind of a single writer. The second is the startling similarity between some of the individual items and some of Aristotle's. Two hypotheses are possible: that there was contact between, or a common origin of, the two traditions; or that formal debate is an important or necessary ingredient of any intellectual culture at a certain stage of its development, and is the driving force behind the development of Logic. They are not, of course, mutually exclusive.

The precise shape that formal debate took at the time of the *Nyāya sūtra* can be only dimly guessed at. There do exist records of formal debates from Buddhist sources at an earlier period, the

reign of King Aśoka, about 255 B.C.[1] They seem to consist of phases in which the two disputants alternately take the floor, and each phase consists of the statement of a single argument, perhaps preceded by a number of clarificatory questions addressed to the opponent. I quote (with my own minor amendments) the first two phases of a debate between monks of rival views concerning the reality of the soul:[2]

PRESENTATION

SCEPTIC Is the soul known in the sense of a real thing?
SUBSTANTIALIST Yes.
SCEPTIC Is the soul known in the way a real thing is known?
SUBSTANTIALIST No, that cannot be said.
SCEPTIC Acknowledge your defeat:

(i) If the soul is known in the sense of a real thing, then, good sir, you should also say that the soul is known in the way a real thing is known.
(ii) What you say is wrong, namely (*a*) that the soul is known in the sense of a real thing, but not (*b*) known in the way any other real thing is known.
(iii) if (*b*) is not admitted (*a*) cannot be admitted either.
(iv) In admitting (*a*) but denying (*b*) you are wrong.

REJOINDER

SUBSTANTIALIST Is the soul not known in the sense of a real thing?
SCEPTIC No, it is not.
SUBSTANTIALIST Is it unknown in the way a real thing is known?
SCEPTIC No, that cannot be said.
SUBSTANTIALIST Acknowledge the rejoinder:

(i) If the soul is not known in the sense of a real thing, then, good sir, you should also say that the soul is unknown in the way a real thing is known.
(ii) What you say is wrong, namely (*a*) that the soul is not known in the sense of a real thing, but not (*b*) unknown in the way a real thing is known.
(iii) If (*b*) is denied (*a*) cannot be admitted either.
(iv) In admitting (*a*) but denying (*b*) you are wrong.

A judge, elected by the assembly (of monks), presides. Whether

[1] See Vidyābhūṣaṇa, p. 234.
[2] Vidyāhbūṣaṇa, pp. 235–6, quotes from the *Kathāvatthu*; see also Bocheński, p. 421.

this is the kind of debate Gautama had in mind remains, however, conjectural.

Most of the works written directly in the Nyāya tradition are actual commentaries on the *Nyāya sūtra*, or commentaries on commentaries. Some of them ring changes on the doctrine without fundamentally altering it. Many invent, like Aristotle's commentators in medieval times, elaborate fine subdivisions of the various categories and, at the hands of Uddyotakara (seventh century), the original fivefold division of fallacies reaches the record grand total of 2,032 subdivisions. We need not investigate these subtleties. Many of the histories subdivide the tradition by religious groupings, so that we are presented in the sixth century with the separate 'Logics' of Praśastapāda (Hindu, Vaiśeṣika tradition), Siddhasena (Jain), and Diṅnāga (Buddhist), but the divisions refer more to epistemological doctrines than to the purely logical topics that here interest us.

Diṅnāga is the most original of these writers and must here do duty for the others. Although he is not uninterested in controversy his theory of inference displays a move away from Dialectic: his 'syllogism' drops the last two members, leaving only *Thesis*, *Reason*, and *Example*, though he adds the concept of a *Counter-example* in an attempt to eke out the deficiencies of this argument by analogy: 'The hill is fiery, because it is smoky, like a kitchen, unlike a lake'. It is not clear whether the Counter-example is meant to support the converse of the general argument or merely the contrapositive. He explicitly rejects Testimony as a basis of argument. On fallacies he gives a fourteen-fold classification of defects that is completely formal in character and tied to his theory of the syllogism: fallacies may infect the thesis, the reason or the example, and these in various ways. The reason, for example, may be 'too wide' or 'too narrow', the reason or example may themselves be uncertain, and so on. Diṅnāga does not attempt to classify controversy as the *Nyāya sūtra* does, does not mention Casuistry, gives a list of only some of the Futile Rejoinders, and ignores Respondent's Failures.

Not only in Diṅnāga, but even in such of his contemporaries and successors as remained close to the Nyāya teachings, the second or 'contradictory' category of fallacy ceased to represent the circumstance of an opponent's contradicting his own

doctrines and came to represent the Fallacy of giving a reason that tends to contradict, rather than support, the proffered thesis. Hence, this too became formal in character. The obscure fifth category of fallacy was variously interpreted but tended to become a rag-bag of cases in which the truth of one or another member of the syllogism was regarded as questionable for extraneous reasons.

The move towards a formal, deductive logic continued after Diṅnāga, and Uddyotakara gave a version of the syllogism in which the Example was at last replaced by the statement of a general rule. The final turning-point came in the fourteenth century with the work of Gaṅgeśa and the growth of what has become known as the *Navya Nyāya*, or New *Nyāya*, school. Gaṅgeśa mentions Casuistry, Futile Rejoinders, and Respondent's Failures only to criticize them, and this seems to be the last point in the history of Indian Logic at which they have seriously been considered at all.

The development of Logic out of a theory of debate, and its ultimate repudiation of its origins, thus seems ultimately to have taken the same course in India as in the West. That the classical Indian list of fallacies, like that of the West, is still studied despite the loss of its principal rationale is support for the view that the study of fallacies in both places has a function different from its ostensible one.

IV.—A NOTE ON THE INDIAN SYLLOGISM.

BY H. N. RANDLE.

THE western syllogism has the appearance of having sprung all at once into existence, from the head of Aristotle, clad in complete mail. It has about it no marks of the labour of thought which brought it to birth, and seems more like a work of art than an organism with an evolution behind it. The Indian 'syllogism,' on the other hand, is an organism with its history plainly recorded in its structure: an untidy organism, too, with vestigial structures and rudimentary organs which are changing their functions while preserving more or less of their primitive form. And for this reason, perhaps, it may have something to tell us about the 'morphology' of thought which is not so transparently conveyed by the more perfect work of art, the Aristotelian syllogism. The more untidy organism may therefore repay study.

The Indian syllogism has neither Mood nor Figure.[1] It has what can be recognised as *corresponding* to the three terms of the Aristotelian syllogism. The 'major term' is denominated the Probandum, and the 'Subject' (or 'minor term') is defined as "that which has the Probandum doubtful."[2] What corresponds to our middle term is called

[1] But see below, footnote 3 to p. 399.

[2] In the earlier logic the word translated literally Probandum, and confined in the later logic to the 'major term,' was applied indiscriminately both to the major and to the minor term. The earliest commentator explicitly says that Probandum means either the Subject qualified by the property-to-be-proved, or the Property-to-be-proved qualified by the subject. This terminology seems to show that the Indian logician did not regard his 'terms' as separable entities: and if he had used symbols (as he never did) he might perhaps have written Sp is sP—instead of our S is P, *i.e.*, the difference between subject and predicate is rather a difference of emphasis within the same complex. It is noteworthy that (so far as I know) Indian logic has no *generic* name for the 'term'. The Indian syllogism has 'Members,' but these are propositions.

Historically, the ambiguity of the word Probandum is due to the fact that it formed the first member of the two compounds *sādhyadharma* and *sādhyadharmin,—sādhya* meaning probandum, *dharma* property, and *dharmin* property-possessor. The former compound was used to refer to the 'major term,' and the latter to refer to the 'minor term,' so that the two things were distinguished by the mere difference in the noun-suffix. But the latter members in these two compounds were

by various names signifying Probans, Mark, Reason. But the Indian logician does not abstract M and P from their concrete embodiments; and he therefore distinguishes SM, or the Probans as it occurs in the Subject or minor term, from XM's, *i.e.*, the Probans as it is found in other concrete cases. And this becomes important in the case of an unlimited probans such as 'existence' or 'knowability'; or again in the case of a probans which is a peculiar property of the Subject, as 'audibility' when used to prove some conclusion about 'sound'. For, in the former case, there are no X non-M's, and in the latter there are no XM's: which, on the Indian view of syllogism as an argument from Examples, casts a doubt on arguments employing such Probans.[1]

It is convenient to use symbols, and the familiar S, M, and P will serve: but the Indian logician did not use them, and they tend to misrepresent his point of view. The appellations major, minor, and middle term, are also misleading, at any rate in speaking of the earlier logic. The earlier[2] Indian logician never considers the distribution and quantification of the terms in the syllogism, and the way of regarding subsumptions which is exemplified in Euler's circles, and which is second nature to us trained in the formalism of Western school logic, does not seem to have entered into his account of syllogism. The whole business of conversion and immediate inference, essential to our formalism, is unknown to Indian logic, so far as I am aware. It is therefore a mistake to equate the Indian logician's list of fallacies with our Undistributed Middle, and Illicit Process. And because his syllogism has no doctrine of Figures[3] it is

ordinarily omitted, so that the first member, *sādhya* = probandum, was left to do double duty as name for both major and minor term. This was so obviously inconvenient that another word, *pakṣa* (side, side to a discussion, thesis), came into use to denominate the minor term, leaving *sādhya* as the appellation of the major.

[1] The terms Subject, Probans, Probandum, are borrowed from Dr. Ganganātha Jhā's translation of the Nyāya Sūtra and Bhāṣya—published in *Indian Thought* (Allahabad and Benares, 1912-1920), and separately (Allahabad). This is a work which places all students of these difficult texts under very great obligation to the author.

[2] A distinction between the Probans as 'pervaded' (*vyāpya*) and the Probandum as 'pervading' (*vyāpaka*) arose in connexion with the doctrine of universal connexion,—*vyāpti*, Pervasion. But it never developed into a quantitative account of the relation of the terms in a syllogism.

[3] A passage in the seventh century Buddhist logical tract Nyayabindu treats of arguments from *Non-perception* as the Probans, as a separate type. These have a negative minor premise and a major of the form All P is M (in place of All M is P). And this is the essential character of the Second Figure. The author first points out that any argument may be

undesirable to equate his arguments with Barbara, Celarent, etc.

After this statement of what Indian logic is *not*, it might seem that there is little left for it to *be*, at any rate as an 'art'; and it might seem that it can have no content worth mention. How could such a logic provide Rules and Canons of syllogism or any criteria for distinguishing valid from invalid subsumption? The doubt may seem to find confirmation in memories of the Indian syllogism as quoted (quite correctly) in some of our manuals of logic—a cumbrous affair of five propositions, two of which seem vain repetition, while the 'major premise' is stated in an apparently unnecessary double positive-negative form, and supported by examples always—apparently—superfluous, and sometimes puerile.

1. That hill is on fire,
2. Because it is smoking;—
3. As smoke and fire go together, on the hearth, while non-smoke and non-fire go together, in the lake,
4. So here: [so *not* here:]
5. Therefore is that hill *so*, *i.e.*, on fire.

(The reference of course is to forest fires in the mountains.)

put either positively or negatively. He calls the positive form the form 'based on likeness' (*sādharmyavat*), and the negative form the form 'based on unlikeness' (*vaidharmyavat*): which means that in the former case the minor premise has the same 'quality' as the major, in the latter it has the opposite 'quality'. But he adds that a mere change of form marks no real difference in the argument. It is the same thing to say

All M is P
S is M

Therefore S is P (the *sādharmyavat* form): and to say

All non-P's are non-M
S is not non-M

Therefore S is not non-P (the *vaidharmyavat*). But he notes that ther is a particular class of arguments from non-perception as Probans,—

All (possible objects of perception) which are present are perceive
The pot is not perceived
Therefore it is not present,—

in which the *vaidharmyavat* form is the form which the argument wil take when the major is stated in the direct or positive form (*anvaya*) This is a genuine CAMESTRES, with affirmative major of the All P is M type.

He points out that you *can* express it as a *sādharmyavat* argument by putting the major in the indirect or negative form (*vyatireka*):—

Whatever (possible object of perception) is not-seen, is not-present,
The pot is not-seen
Therefore it is not-present.

This of course is BARBARA in form—but not in nature. The truth about 'Figures' seems to be clearly enough apprehended here, though the Figure as a 'dodge' was not utilised in the Indian schools.

That seems to have been the early form of the syllogism [1] —a *paradeigma* or argument from particular to particular through likeness or unlikeness; and yet on its way to becoming an explicit 'deduction' from a universal connexion, or *vyāpti*, 'Pervasion' of smokiness by fieriness. This element of *vyāpti* later came to be more and more emphasised, until the example got the appearance of an excrescence, although always retained as an element in the third member of the five-membered syllogism. The third member then took the form:—

All that is smoky is fiery, as the hearth; and all that is not fiery is not smoky, as the lake.

That is, the element of analogy is now obscured, for the 'so' [2] of the fourth and fifth members no longer appears as correlative of the 'as' in the third member, but as a mere demonstrative standing for the M and P of (what is now) the major premise. And the third member has now crystallised into a formula with the order of terms fixed:—

All M is P . . . and All non-P is non-M.

It is in this developed form that the Indian syllogism is quoted in European books. The European reader then says to himself: "This of course is a combination of a syllogism in *Barbara* with a syllogism in *Cesare*:—

All that is smoky is fiery
This hill is smoky
Therefore it is fiery

and

Nothing that is not-fiery is smoky
This hill is smoky
Therefore it is not non-fiery, *i.e.*, it is fiery.

One of these syllogisms is unnecessary: the two examples are superfluous: and the first two members are identical with the last two and serve no purpose."

All these three criticisms have been anticipated by Indian logicians. As regards the last, a distinction was made between 'inference for oneself' and 'inference for another' (*i.e.*, the setting out in words of a reasoned belief for the instruction of others), and the five-membered syllogism was by some

[1] See Prof. A. B. Keith's *Indian Logic and Atomism* (Oxford Univ. Press, 1921), p. 87.

[2] The earliest commentator says explicitly "the Application—fourth member—is a comparison (analogy), as is shown by the word 'so'".

logicians confined to 'inference for another'.[1] Ordinarily all schools state their inferences with the utmost possible brevity, in the form: "The hill is on fire, because smoky; like the hearth." But it will be noted that the *example* is retained, even in this abbreviated form.[2] The third member was always called, not after the statement of concomitance which it contained, but after the *illustration* of that concomitance included in it: that is, it was known as the *Example* (*udāharana*). The five members of the full syllogism were called (1) the Proposition, (2) the Reason, (3) the Example, (4) the Application, (5) the Conclusion.[3] For us it is the 'major premise' that conveys the relation of the middle to the minor; for the Indian logician it was always the 'Example' that carried this function.

And that is why (to revert to the second of the three criticisms brought against the Indian syllogism) the third member has the double positive-negative form. It certainly would be superfluous to state *in a 'major premise'* not only that All men are mortal but also that No immortals are men; because, as the Indian logician was well aware,[4] the one form implies the other. But so long as the weight of your argument is

[1] It seems to me clear that this is the meaning of even the earliest commentator, Vātsyāyana, though he does not explicitly formulate the distinction between 'inference for oneself' and 'inference for another'. He never calls the five-membered syllogism 'inference' (*anumāna*), but refers to it as the Probative Statement (*sādhakavākya*). And in a significant passage (1., i. 39) he says that this Probative Statement, or syllogism, is a combination of the several means of knowledge (*pramāna*): the first member or Proposition being matter of Testimony; *the second or Reason being Inference*; the third or Example being matter of Perception; the fourth or Application being Comparison (also reckoned by some as a separate means of knowledge).

[2] It was not uniformly retained. After the full development of the doctrine of universal concomitance or Pervasion (*vyāpti*) a feeling arose in some quarters that the example was superfluous, and it was rejected altogether by a few writers. But this was an abnormal doctrine, and contrary to the spirit of the Indian syllogism.

[3] The conclusion is the restatement of the Proposition. A scholiast on the Prior Analytics observes that the 'problem' is the same as the conclusion: when put forward with a view to proof as something not known, it is called the problem: when proved it is the conclusion. Brandis, *Scholia*, p. 150, col. 2, ll. 38-46.

[4] *E.g.*, the Buddhist logical tract *Nyāyabindu* follows up the useful principle that words are not necessary when the thing is understood, with a demonstration that the positive form of the *vyāpti* implies the negative and *vice versa*. Only one need be *stated*. Another work quotes the ingenious observation of a critic of the full syllogism, considered as 'Inference for Another,' to the effect that other people's mental processes are difficult to get at, and that it is impossible to say that just so much verbal expression will convey understanding, and less will not.

felt to be carried by the *example*, the case is different: and it is now necessary to give two examples, one of positive concomitance of M and P, and the other of negative concomitance—one an XMP, the other an X non-M non-P. For an example of positive concomitance *alone* proves nothing: but if an example of negative concomitance is adduced at the same time, then, *under certain conditions* your *paradeigma* may amount to a demonstration of the conclusion.

What are these conditions? How far was the Indian logician able to formulate them without that apparatus of mood and figure and distribution of terms which constitutes formal logic for the western schoolman? Is there any way of laying down syllogistic canons other than that of the Dictum de Omni et Nullo?

If Example is made the nerve of demonstration, the validity of the argument will obviously depend on whether or not a concrete *enstasis*, or 'instance' in the shape of a *counter-example*, is forthcoming. The material with which logic, so conceived, would work, would be Positive Examples (MP), Negative Examples (non-M non-P), and 'Instances' in either of two forms (M non-P, and non-MP). And the Canons of the syllogism, conceived thus as an affair of Examples and Counter-examples, would consist in a statement of *what examples, in the absence of what 'instances,'* will establish a valid conclusion.[1] Such Canons are to be found in a doctrine of the Three Characteristics of the Reason (*trirūpahetu*) formulated both by the Buddhist logician Dignāga [2] and the orthodox philosopher Prasastapāda, perhaps about 400 A.D.; and passing through their formulations into the general logical stock-in-trade of the Indian schools.

The three characteristics which the middle term must have are:—

1. It must reside in the Subject.[3]

[1] Which amounts to saying that the Canons of syllogism are the Canons of 'induction'. And I believe that this is just what the Indian view of syllogism *amounts* to. Dr. B. Faddegon in his Vaisesika System (Amsterdam, 1918) calls the Indian syllogism a combination of a deduction with a superficial induction. See further on this point below.

[2] Otherwise Dinnāga, a very interesting figure in the development of Indian logic, on whom see Stcherbatskoi's brilliant article in *le Muséon* (1904), n.s., vol. v., which has formed the basis of subsequent discussion. Dinnāga's works are unfortunately available only in Tibetan versions, but some account of them has been given by Dr. S. C. Vidyābhūsana in his *Indian Logic: Mediæval School.* I draw my account from this work.

[3] In the older writers like Prasastapāda and (perhaps) Dignāga, the word translated Subject was still liable to the ambiguity noted above [the word used is the equivalent of *sādhya* and liable to the same ambiguity, as meaning either Subject (minor term) or Probandum (major term)]. It is

2. It must reside in Positive Examples only.[1]
3. It must be only [1] absent in Negative Examples.

The formulation of the Second and Third Canons is a clear case of botching, and the double use of 'only' is where the botching comes in. And the word *only* in both cases may well be the addition of a botcher who was trying to make a *paradeigma* do what it by its very nature could not do, *i.e.*, give a guarantee that no contrary case *could* be produced. You cannot prove '*only*' by examples. The utmost you can do is to challenge an opponent to produce his contrary case, his XM non-P, yourself producing cases of X non-P which

therefore possible, even probable, that the first canon as originally formulated was an assertion of universal connexion between Probans and Probandum. Later writers, however, always took it in the sense in which it is translated above, *i.e.*, as the assertion that the Probans must be found in the Subject—S must be M. And this seems so much more likely an interpretation *prima facie* that it seems gratuitous to suggest that it originally had the other meaning. There are nevertheless strong reasons for believing that this was the case—see Keith, *Indian Logic*, pp. 137-138. If so, these Canons present exactly the same double character and the same redundancy as the syllogism itself presents in its third member, the 'Example' so-called, which combines a statement of 'Pervasion' (*vyāpti*) with concrete examples. As Dr. Keith says: "the explanation . . . is perfectly simple. The three conditions represent a precise statement of the third member of the syllogism, the Example, when completed as it was in Prasastapāda's time by the enunciation of the general proposition." Dignāga is credited by modern critical historians of Indian Philosophy with the 'discovery' of the universal proposition, and it is supposed that Prasastapāda borrowed this and much else from him.

[1] It is the word translated 'only' in the two latter Canons (Sanskrit *eva,* a particle of emphasis and exclusion) around which controversy as to the exact formulation of these canons has turned.

The Second Canon means that XP's (some, not necessarily all) must be M, and that no counter-example of X non-P being M must be forthcoming.

The Third Canon means that X non-P's (all of them) must be non-M, and that no counter-example of X non-P being M must be forthcoming.

The objection to the formulation is obvious—the 'only' of the Second Canon excludes precisely the same counter-examples as are excluded by the 'only' of the Third Canon. And as the Second Canon has already stated, by means of this exclusion, that all XM's must be XP's, there is nothing gained by the contrapositive statement in the Third Canon—that all X non-P's must be X non-M's. And I think that the formulation is in fact indefensible.

But it is easy to see how it grew into this form. First there is the need of positive examples, XMP's. Then there is the need of *denying* the occurrence of counter-examples XM non-P. And this denial *can only* take the form of pointing to X non-P non-M's. The limits of the method are in fact reached when you have pointed to XMP's and then (in answer to the suggested possibility of XM non-P's) pointed to cases of X non-P's which are non-M.

are *non-M*. When you have done this you have exhausted the possibilities of your method. Experience has shown MP's. It has *not* shown M non-P's. On the contrary it shows non-M non-P's. And there you have the natural Canons of a syllogism which remains an affair of examples and counter-examples.

Of course there is an inclination to interpret the *Trairūpya*, the Three Characteristics, in terms of the *Dictum de Omni et Nullo*, as an affair of 'distribution of terms'; and I do not deny that there were tendencies in Indian logic itself towards the quantitative view embodied in the *Dictum*. And yet I think that the best way to understand the spirit of the *Trairūpya* is to forget the *Dictum*, and to interpret the Indian formulation of the syllogistic canons in the light of the original Indian conception of syllogism,[1] which had no terms and no notion of their distribution. It is in this light rather than in the light of the *Dictum* that we can best understand the List of Nine Valid and Invalid Types of Syllogism, contained in Dignāga's tract entitled the Wheel of Reasons Set in Order—the nearest approach that I know of in Indian logic to our *Barbara Celarent, etc.* The nine arguments represent all possible 'moods'[2] of the syllogism, invalid as well as valid—so that Dignāga's syllogism has at least the advantage of parcimony compared with ours. Two are valid. Five come under the head of *Inconclusive.*[3] Two come under the head of *Contradictory.*[3] The topic of all nine Types is the same—the eternity or transitoriness of sound: which means nothing to us, but was a much discussed question in the Indian schools. The nine arguments which follow will be found in a diagram facing page 100 of Dr. Vidyābhūsana's book. They are there arranged as follows; but I am not clear whether the arrangement in a square is Dignāga's or Dr. Vidyābhūsana's :—

[1] By which I mean the earliest available account of syllogism. And this is to be found in the Nyāya Sūtra, and in Vātsyāyana's Bhāsya or commentary thereon. Neither can be dated, though Jacobi has attempted to date the Philosophical Sutras in the *Journal of the American Oriental Society*, vol. xxxi. (The references in the Vaisesika Sūtras are no doubt earlier, but hardly constitute an intelligible 'account' of syllogism.)

[2] But they are not 'moods,' rather Types.

[3] These are two of three classes of fallacy commonly recognised. A third class of fallacy is the *Unreal* reason, which consists in taking a middle term which is not found in the Subject, and thus constitutes a breach of the first canon. This class of fallacy is not represented in the Wheel of Reasons : the Wheel only sets forth all possible relations of the 'middle' to the 'major,' and does not concern itself with the relation of the 'middle' to the 'minor'.

The Wheel of Reasons.

I. Inconclusive (unlimited).	II. VALID.	III. Inconclusive (too wide).
IV. Contradictory.	V. Inconclusive (too narrow).	VI. Contradictory.
VII. Inconclusive.	VIII. VALID.	IX. Inconclusive.

No. I. Sound eternal because an object of knowledge. (Inconclusive.)
Positive example XMP . . Ether.[1]
Negative Example . . . (None is possible, for nothing can be quoted which is *not* an object of knowledge.)
Counter-Example XM non-P . A pot.

No. II. Sound non-eternal because produced. (VALID.)
Positive Example XMP . . A pot.
Negative example X non-M non-P Ether.
Counter-Example . . . (None is forthcoming.)

No. III. Sound an effect of effort or volition, because non-eternal. (Inconclusive.)
Positive Example XMP . . A pot.
Negative example X non-M non-P Ether.
Counter-Example XM non-P . Lightning.

No. IV. Sound eternal, because produced. (Contradictory.)
Positive Example . . . (None forthcoming.)
Negative Example . . . (None forthcoming.)
Counter-Example XM non-P . A pot.
Counter-Example X non-MP . Ether.
(The two counter-examples provide the material for argument No. II., leading to the contradictory conclusion.)

No. V. Sound non-eternal, because audible. (Inconclusive.)
Positive Example . . . (None is possible in this Type, known therefore as 'the too restricted reason'. There is no XM, but only SM, since audibility is the peculiar property of sound.)
Negative Example X non-M non-P Ether.
Counter-Example X non-MP . A pot.
(But of course no Counter-Example in the fatal form of XM non-P will be forthcoming, as there are no XM's. The case must be argued in the field of non-M's.)

[1] Dr. Faddegon, *op. cit.*, p. 108, remarks : "The translation of *ākāsa* by 'ether' is very misleading. It has nothing in common either with the Greek notion of αἰθήρ or with the notion of ether as conceived by modern European physics. It is space as the medium through which sound is transmitted. I have called it 'physical space' in order to distinguish it from *dis*, *i.e.*, space regarded with reference to direction, termed by me 'mathematical space'." (*Dis* is the root found in Greek δείκνυμι. *Ākāsa*, etymologically, would indicate brightness or light. Philosophically, its function is to be the medium of sound, and the subtle stuff of which the inner organ of hearing is composed.)

No. VI. Sound eternal, because an effect of effort. (Contradictory.)
Positive Example . . . (None is forthcoming.)
Negative Example X non-M non-P Lightning.
Counter-Example XM non-P . A pot.
Counter-Example X non-MP . Ether.
(The two Counter-Examples provide the material for argument No. VIII., leading to the contradictory conclusion.)

No. VII. Sound a non-effect-of-effort, because non-eternal. (Inconclusive.)
Positive Example XMP . . Lightning.
Negative Example . . . (None forthcoming.)
Counter Example XM non-P . A pot.
Counter-Example X non-MP . Ether.
(Here the positive example prevents the two counter-examples from establishing the contradictory conclusion, as they do in No. VI.,—so that the reasoning is merely inconclusive.)

No. VIII. Sound non-eternal, because an effect of effort. VALID.
Positive Example XMP . . A pot.
Negative Example X non-M non-P Ether.
Counter-Example X non-MP . Lightning.
(A counter-example in the form X non-MP does not affect the validity of the argument. Contrast No. III. In the other VALID argument, No. II., there are no non-MP's, because, as we should say, the major premise is simply convertible, *i.e.*, all M is *all* P.)

No. IX. Sound eternal, because corporeal; (*or*, because incorporeal). (Inconclusive.)
Positive Example XMP . . Atoms.
Negative Example X non-M non-P Action.
Counter-Example XM non-P . A pot.
Counter-Example X non-MP . Ether.
(If you take 'incorporeal' for the middle term, the counter-examples become the examples.)

Such a list underlines the fact that a counter-example in the form XM non-P is fatal whereas a counter-example in the form X non-MP does not matter: which *amounts* to saying that All M must be P and that All non-P must be non-M; whereas it is not necessary that All P should be M and that All non-M should be non-P. From the time of Prasastapāda and Dignāga the latter mode of formulation had established itself and the 'major premise' had crystallised into the two propositions with order of terms fixed and subject 'quantified'—All M is P; All non-P is non-M. But the other way of formulating the syllogism, by example and counter-example, was the original way, and it continued to survive alongside of the new method. Hence the double character of the Indian syllogism (in respect of its third member, the so-called 'Example'), and hence the rather confused combination in the *Trairūpya*, or syllogistic Canons, of the two points of view. That the syllogism still continued to be regarded as an affair of examples is evidenced by the interpretation commonly put upon the second and third Canons. They were usually interpreted to mean, not

merely that all M must be P and that all non-P must be non-M; but further that there must be *actual examples* (other than S) of M being P, and also *actual examples* of non-P being non-M. That is, the second was taken to mean that actual XMP's must be forthcoming; while the third was taken to mean that actual X non-P non-M's must be forthcoming. And these requirements become of obvious importance in the cases of two of the Types of argument given in the Wheel of Reasons,—the argument from an *unlimited* reason (No. I., sound is eternal because knowable) : and the argument from a *too limited* reason (No. V., sound is non-eternal because audible). For in the former case *there is no non-M:* and in the latter case *there is no XM.* Indian opinion divided itself in a very significant controversy as to whether arguments in these two types could ever be regarded as valid. It is worth while considering these two types in more detail.

No. I., the unlimited or '*Purely Positive*' Reason:

The example of this given in the Wheel is open to the fatal counter-example of the pot which is of course knowable, and yet not eternal. But if an unlimited middle term is used to prove an *unlimited major*—as, the pot is nameable because knowable,—so that no counter-example in the form XM non-P is forthcoming, is this type of argument still inconclusive? Some rejected such arguments as breaking the third Canon—that the Probans must be absent in negative examples—this being interpreted to mean that there must *be* negative examples, X non-M non-P. The orthodox school of logic (the Nyāya), however, maintains the validity of such arguments, classing them under a separate rubric under the name 'purely positive' (*kevalānvayin*). The real solution of the controversy no doubt is that the reasoning would be invalid if it were paradeigmatic: and the Indian logician makes syllogism an affair of examples. But in this type of argument the positive 'examples' are as irrelevant as negative examples are impossible. For the reasoning is not by examples at all, but implicative—a matter of 'agreement of ideas,' and not of evidence. And, as such, it is valid reasoning, though invalid *paradeigma.*

No. V., the '*too limited*' or '*Purely Negative*' Probans:

Sound non-eternal because audible. Obviously we could just as well argue that sound is eternal because audible, for no XM can be adduced, since the M, audibility, is the peculiar property of the S, sound. The argument is therefore confined to negative cases, X non-M's, things that are not the object of the auditory sense—and of these some are eternal and some are not. (Sound itself of course cannot be used as

an example, SMP, for S, the minor term, is by definition "that which has the probandum *doubtful*".)

But suppose that in the sphere of negative cases, X non-M's, as a matter of fact P is *not* found, so that no enstasis to the experience X non-M non-P is forthcoming (in the form of a counter-example X non-MP). The Nyāya school, which defends this type, under a rubric of 'Purely Negative' Probans (*kevalavyatirekin*), adduces as an instance of a valid inference in this type the argument "The living organism has a soul because it has vital functions." No positive example can be quoted, other than the living organism itself, of things possessing vital functions. But within the sphere of things *not* possessing vital functions—pots and the like—no one would assert the existence of soul: so that to the negative example X non-M non-P no enstasis in the form X non-MP is forthcoming.

There is the same division of opinion about this 'Purely Negative' type as there is about the 'Purely Positive' type; some rejecting it as a breach of the second Canon—that the Probans must reside in Positive Examples only: which is interpreted to mean that there must *be* a positive example, XM. And here again the solution of the controversy seems to be that such arguments are invalid *paradeigmata*,[1] but

[1] The trick of the *purely negative* pseudo-paradeigma is a fallacy of many questions. Your opponent maintains that there is no such thing as a soul. "Well then," runs the retort, "of course you will agree that inanimate things are soul-less?" The opponent (it is supposed) feels himself compelled *a fortiori* into this admission, having maintained the more comprehensive position that *everything* is soul-less. The admission provides you with the negative example free from enstasis which you consider *in this particular Type* sufficient for proof. As a matter of fact your argument will involve an illicit process of the major :—

Inanimate things are soul-less
The living organism is not inanimate
Therefore the living organism is not soul-less.

(The seventh century commentary Nyāya-vārttika states the argument in this form—*Bibliotheca Indica* edition, p. 126, l. 6. Later commentators 'convert' the major premise. The author of the Vārttika is of course aware of the objection to which his form of argument is exposed—that "it does not establish exclusion of soullessness in the living organism". His reply takes the form of an *argumentum ad hominem*—the objector must beg the question if he tries to adduce an instance in which the exclusion of absence of vital functions does *not* exclude the absence of soul—for he can only adduce the living organism itself.)

It is impossible to get over this difficulty without begging the question openly: for to convert the major into the required form "All soulless entities are inanimate" is to deny *ab initio* the opponent's position that some soulless entities are animate, *viz.*, the living organism.

But the question has been begged already in presenting the opponent

may still be valid inferences by presumption or implication within a system. Again it is a matter not of evidence and example, but of the agreement of ideas. The Indian schoolman starts from the view that all inference is an affair of examples. He then comes across valid inferences which refuse reduction to the normal type. He therefore invents abnormal types which are paradeigmata only in appearance, in order to provide for these cases.

These two Types are therefore of interest as pointing the moral that a view of inference [1] as subsumption under a major based on 'evidence' goes bankrupt as soon as it has to deal with reasoning that depends, not on evidence, but on the agreement and disagreement of ideas (to use Locke's phrase again). It seems to me that the whole of mathematical reasoning would have to go into the purely negative Type—with ludicrous results. If I wanted to prove that five and seven are twelve, I should probably say to myself "twice five are ten; and two makes twelve". No positive example is available, other than seven *plus* five itself. And to argue negatively that six and seven, etc., are not twelve, and therefore five and seven *are*, does not recommend itself as a reasonable alternative.

The moral is pointed so plainly by Indian logic, just because Indian logic insisted on the concrete examples which the western syllogism finds superfluous. What the Indian logician says, in effect, is: "If you are going to have an argument which you can call a valid 'syllogism,' you must be in a position to support your 'major premise' by concrete cases other than the Subject or minor term." The western student would retort: "If you have a genuine universal—a *vyāpti*—for your major, the citation of examples is perfectly irrelevant. *Your* syllogism is a cross between an indecisive analogy or argument from particular to particular on the

with a dichotomy into soulless and soul-endowed things, which is implied in asking him to admit that inanimate things are soulless. The prior question is whether the dichotomy within which the opponent is asked to make affirmation or denial is a universe of reasonable discourse at all. From the opponent's point of view it is not—and therefore he need neither affirm nor deny.

[1] Some schools admitted the existence of inferential processes other than "syllogism" (*anumāna*). One such process is *Arthāpatti*, which English translations render either by 'Presumption' or by 'Implication'. The stock example of this is: "Devadatta, who is fat, does not eat by day: *ergo*, he eats by night." (Bosanquet too would have called this 'implication'.) The nerve of the process is that the facts (*artha* = thing) force some presumption upon the mind. It is thus that you know, for example, that there is a potency in the seed which makes it grow. The orthodox school reduces *arthāpatti* to the 'purely negative' type of syllogism.

basis of similarity, and a cogent deduction from a universal principle on the basis of identity of nature."

The question cannot be profitably debated further without asking the critic of the Indian syllogism whether he supposes the major premises of *his* syllogisms to be always derived from particular cases—examples—by induction. If his answer is in the affirmative it seems to me that he has no case against the Indian view of the syllogism as an affair of examples. And Mill in his criticism of the syllogism is in fact practically affirming what the Indian formulation affirms —that the reasoning is from particular to particular, since the major premise adds nothing to the *evidence* for the conclusion. The evidence is the Examples. The critic's syllogism is then a hybrid, being no more than a *paradeigma* which conceals its humble origin in the particular by suppressing those Examples on which the Indian syllogism insists.

A subsumption of this sort, at any rate, *i.e.*, under an inductively established major, such as the Indian syllogism confessedly is, and such as our text-book syllogisms for the most part really are, is a relatively inferior form of inference: and so it has not been content to remain within its own nature, but has reached out towards more cogent forms of inference. It has done this by substituting an explicit formulation of the universal for the concrete embodiments of it from which, as *paradeigma*, it really argues: and then, in the western school logic, by substituting the purely quantitative or mathematical [1] cogency of the relation between container and contained in the place of the cogencies of real relationship which are in truth the nerve of inference.

But in thus passing from an affair of examples into an affair of quantitative relations the paradeigmatic syllogism achieves a pseudo-cogency only at the cost of ceasing to be syllogism in any sense whatever. For it now becomes the eduction of quantitative relations or correlates within a purely quantitative system; and the major premise is no longer (what it purports to be) the principle from which the conclusion is *deduced*: but becomes just one of the quantitative data from which (in accordance with *implicit* mathematical principles) a quantitative result is *educed*. *Quantitatively considered*, the syllogism is no more syllogistic than are such arguments as 'A is to the north of B, and B is to the west of C, therefore A is to the north-west of C'. It is as purely

[1] I think I remember the late Prof. Cook Wilson referring to 'the science of SMP' as a branch of mathematics.

'relational' an inference as *they* are. And surely no light is thrown on the inner nature of all possible inferences by an attempt to throw them all into the common form of a problem of quantities—an affair of 'All and None'.[1]

With the development of the doctrine of *vyāpti* or universal connexion explicitly formulated, and with the substitution of the category of Class Nature (*sāmānya*) for Similarity (*sādharmya*) as the principle of syllogistic inference, Indian logic took the step which leads naturally to the quantitative view of the syllogism. But it developed a formalism [2] along differ-

[1] No less relational, and no more syllogistic, is the quite different type of argument from relations of identity, such as that which is sometimes adduced as a case in which the 'syllogism' plainly functions in the discovery of a new truth,—the case of the priest who has just said that his first confession was that of a murder—whereupon X enters the room and greets the priest with the remark that *he*, X, was the first person to make a confession to the priest. A is B. B is C. *Ergo*, A is C—X is a murderer. A good inference, but not assuredly a subsumption in any sense: having neither a universal premise stating a principle from which the conclusion is deduced; nor yet any 'example' adducible of universal connexion between being the first person to make a confession to this priest, and being a murderer. It is a purely relational argument, the relation being that of numerical identity. I can see no excuse at all for calling such an argument syllogistic, except the accident that it happens not to involve the *quaternio terminorum*, which is obvious in arguments like A is to the right of B, and B to the right of C.

I suppose the orthodox Indian logician would have treated this argument from identity as belonging to the 'purely negative' type of syllogism:—

"X is a murderer,
Because he is the first person who made a confession to Y,
Those who were *not* guilty of this murder did *not* make the first confession to Y—like Z etc."

And other relational arguments could be similarly treated—or maltreated. For this Type, as noted above, is a department of syllogism roo[m]y enough to hold the whole of mathematics.

We get over the difficulty, in the case of the argument from identity, by treating singular propositions as equivalent to universals—a sufficiently uncritical procedure. We do not get over it at all in the case of the other relational arguments which involve *quaternio terminorum*: for attempts to construct a major stating the principle of the inference, whilst crowding all the data into a congested minor, may be disregarded as a confessed failure.

[2] The slight acquaintance which I have with the later developments of Indian logic perhaps justifies the statement that the formalism which Indian logic *did* develop is a far more terrible affair than anything the Western schools can boast of. It consists (externally at least) in the introduction, into definitions, of an almost incredible verbal complexity, in the form of compounds which are, quite literally, *sesquipedalia verba*. The acquiring of the habit of mind necessary for the unravelling of these syntax-less word-masses is a discipline of years, and one which I do not hope to undergo. This type of scholasticism commences with the twelfth century and flourishes to-day in the schools of indigenous culture.

ent lines, and never elaborated the quantitative concept in the manner of the western school logic. The western formalism seems to me (partly no doubt owing to its familiarity) as a very much more efficient 'dodge': though I do not think it can claim to be a more philosophical formulation of subsumption than the Indian syllogism. Indeed, the retention of the 'Example' may be regarded as having given the Indian 'syllogism' a better chance of avoiding the fate of becoming a barren thought-form than the quantitative formulation gives it: for the quantitative theory of syllogism can only re-vivify itself in a theory of Induction, that is, in a theory of Example —which is what has happened to it in the West. India, however, failed to exploit the advantage of its insistence on the Example because it used its syllogism mainly for ontological and theological reasonings—that is to say, in just that sphere of inference within which 'induction' has least scope, and in which *therefore* the paradeigmatic syllogism is least applicable.

Both syllogisms, Indian and Western, have claimed to be the universal type of inference, and in both cases the claim has been questioned. In India the term used for inference is the term used for syllogism (*anumāna*), and therefore the demurrer against the claims of syllogism does not take the form of saying that there are other forms of *inference* apart from *anumāna*, syllogistic inference; but that of saying that there are other instruments of valid cognition (*pramāna*) besides (syllogistic) inference, perception, and authoritative testimony (which with Comparison are the four *pramāna's* recognised by the orthodox logical school): but the other means of valid cognition which the critics put forward are in fact other forms of *inference*—for instance *arthāpatti*, Presumption or Implication, the stock example of which is just a disjunctive inference.[1]

Criticisms of this nature have, in India, arisen from the fact that there are types of inference in which '*Example*' plays no part. In the West they rather arise from the difficulty of finding the characteristic *three terms* of syllogism in relational arguments. In both criticisms the emphasis is laid on the difficulty of *formulation*—on the Indian view you cannot find the *example* which the *Trairūpya* requires: on the Western view, you get a *quaternio terminorum* which the Rule of Syllogism forbids.[2]

[1] See footnote to p. 410.

[2] The larger question is whether the universal always functions in inference in the way in which the syllogism represents it as functioning. The doctrine of syllogism, as universal type of inference, is that the universal acts always as an explicitly apprehended *unit* in the inference—it

On the whole the Indian scholastic has shared with the scholasticism of the West the view that syllogism is the ideal and universal type of inference. As regards the two methods of formulating it, my feeling is that the Western scholastic, with his quantitative apparatus of formalism, has been worshipping idols of the theatre not less, but rather more, than the Indian scholastic with his 'Examples'; that the *Dictum de Omni et Nullo* is even further from the truth about inference than the Indian *Trairūpya*, or Three Characteristics of the Middle Term: and that the paradeigmatic syllogism of the Indian schools is on the whole preferable to BARBARA CELARENT.

is a Member or Premise of the reasoning. There is in the mind a vast reticulation of concepts or points of view, *vyāpti's* (whether or not these are regarded as derived from prior concrete experiences); and syllogism is the process through which the special case is caught in the meshes of this net of abstractions—the logical ideal of reasoned truth being satisfied only if the universal is explicitly apprehended and formulated in abstraction from the particular embodiment of it to which the reasoning 'applies' it. That the universal sometimes functions in this way must be admitted. That it always does so seems to be an illusion of the schools.

J. F. STAAL

THE CONCEPT OF *PAKṢA* IN INDIAN LOGIC

In studying a civilization different from our own we are prone to impose the conceptual framework and prejudices of our own tradition. The study of Indian logic by Western scholars, including Indian scholars who accepted certain tenets of Western logic, forms no exception. S. C. Vidyabhusana, the first historian of Indian logic, looked at his subject through eyes so colored by what he regarded as Aristotelian logic, that he talked of the 'Indian syllogism' and saw in it traces of the influence of Aristotle – a historical claim no serious student of Indian logic would nowadays wish to make his own. Moreover, like many other scholars of his generation, Vidyabhusana was not really familiar with Aristotle, but rather with what is generally called 'traditional logic', a mixture extracted from Aristotle, but enriched with the left-overs of numerous other dishes. A decade later, the great Russian pioneer of the study of Buddhist logic, Th. Stcherbatsky, adopted a Kantian framework and introduced thereby even greater confusion. For unlike Aristotle, who doubtless continues to be the greatest logician in the Western tradition, Kant was no logician, and the greatest weaknesses of his philosophy are due precisely to his ignorance of logic.

I present these remarks by way of introduction, but they should not be regarded merely as historical anecdotes. For the prejudices of Vidyabhusana and Stcherbatsky continue to affect our understanding of Indian logic. This is clear from the literature in Western languages even on such elementary notions as the concept of *pakṣa*. This particular notion is furthermore obscured by the fact, that the term *pakṣa* is within Indian logic itself not used unambiguously. And so we witness the growth of a dense jungle of scholarship – first in Sanskrit, and next in Western languages – due to confusions around a notion that is basic and quite elementary. This paper attempts to clear some parts of that jungle.

There is no point in criticizing theories unless it is from the perspective of what one regards as the correct theory. Similarly, in order to appreciate precisely where and how some interpretations have gone wrong, we have

to know the right interpretation first. I shall therefore begin by elucidating the most important and most technical meaning of the term *pakṣa* in Indian logic, which occurs throughout its development, Hindu as well as Buddhist, and which is in fact straightforward and simple. In Indian logic, entities are never considered as if they were hanging in the air, but always as occurring in a locus (*āśraya*; *ādhāra*; *adhikaraṇa*). In this sense, Indian logic has its feet firmly on the ground. This ground, in the case of any specific case of inference, is called its *pakṣa*.

In order to explain this a little more precisely I shall make use of formal expressions, thereby perhaps inviting the accusation that I am imposing on the Indian material a framework of modern mathematical logic, thus merely substituting a more fashionable bias for the Aristotelian and Kantian prejudices of my predecessors. But this in fact is not the case. I use symbols merely because they are more precise and unambiguous than ordinary English. By introducing them I do not import any notions, theorems, or theories of contemporary Western logic.

In Indian logic, an entity, say x, is never regarded in isolation, but always considered as occurring in a locus, say y. The fundamental relation which underlies all expressions is therefore the relation which obtains between each entity and its locus. Since such a relation relates x to y, it is a two-place relation, which may therefore be written as:

(1) $A(x, y)$.

This may be read as: 'x occurs in y', or, alternatively, as 'y is locus of x'. The relation A may be called an occurrence relation.

Given such relations, an inference is not merely a relationship between two entities, but a relationship between two entities as occurring in a locus. It would therefore be incorrect, or at least a rather rough approximation, to express the relationship between h, the *hetu* 'reason' and s, the *sādhya* "thing-to-be-inferred, inferendum"[1], as:

(2) $h \rightarrow s$.

It is more appropriate to express the relation of inference as a relation between two occurrence relations of the type (1), i.e., as:

(3) $A(h, p) \rightarrow A(s, p)$.

This may be read as follows: 'if the *hetu* occurs in p, then the *sādhya* occurs

in p'. Here the particular locus p in which the particular inference between h and s occurs, is what is called the *pakṣa*. In the stock example, the *hetu* is smoke, the *sādhya* is fire, and the *pakṣa* is a mountain. On this interpretation, (3) may be read as: 'if smoke occurs on a mountain, then fire occurs on that mountain'.

Part of the later history of Indian logic is the attempt to generalize expressions of this form in such a way, that they hold not only for a specific *pakṣa*, but for all loci. What is then attempted is to arrive at expressions equivalent to:

(4) $$(x)\,(A\,(h, x) \rightarrow A\,(s, x)),$$

which may be read as: 'for all x, if h occurs in x, then s occurs in x'; or: 's occurs wherever h occurs' (cf. Staal, 1962). I am not concerned with these later developments (treated in *navya-nyāya* in some of the commentaries upon the section called *pakṣatā* of the *Tattvacintāmaṇi*), but shall confine myself to the original notion of *pakṣa* itself.

Vidyabhusana interpreted the notions of *pakṣa*, *hetu* and *sādhya* in terms of traditional logic as minor term, middle term and major term respectively (e.g., Vidyabhusana, 1921, pp. 176, 312). In order to see to what extent this is correct we shall have to go back to Aristotle (cf. Bocheński, 1951, pp. 42–46). Aristotle considered primarily sentences of the form 'x belongs to y', which may be symbolized as:

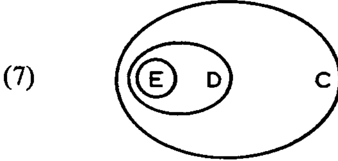
(5) $$B\,(x, y).$$

A syllogism then consists of two premisses of the form (5) from which one conclusion again of the form (5) is derived. Different types of syllogism are obtained by substituting for 'x' and 'y' in the premisses and in the conclusion three terms: one in one of the premisses and in the conclusion; another in the other premiss and in the conclusion; and a third in both premisses. The third term is called 'the middle'; the other two, 'the extremities'. The following is an example, where D is the middle term, and C and E are the extremities:

(6) $$\begin{array}{l} B\,(C, \text{all } D) \\ \underline{B\,(D, \text{all } E)} \\ B\,(C, \text{all } E) \end{array}$$

or: 'if C belongs to all D, and D belongs to all E, then C belongs to all E'.

Of the extremities, one is called the minor term and the other is called the major term. These terms, however, are not defined according to their formal position in syllogisms of the form (6); rather, they are defined, at least for the first figure[2], according to their *extension*. What this means is best seen when (6) is illustrated as follows:

(7) 

Here, E, which has the smallest extension, is the minor term; and C, which has the largest extension, is the major term.

We are now in a position to return to Indian logic. It is obvious why Vidyabhusana thought that the *hetu* corresponds to the middle term: neither the *hetu*, nor the middle term occurs in the conclusion of the inference. That is to say, the *hetu* does not occur on the right side of (3), i.e., in:

(8) $A\ (s, p)$,

and the middle term does not occur in the conclusion of (6), i.e., in:

(9) $B\ (C, \text{all } E)$.

It is also clear why he thought that the *pakṣa* and the *sādhya* correspond to the minor term and the major term, respectively: for (8) or 'the *sādhya* occurs in the *pakṣa*' looks somewhat like (9) which seems to express: 'the major term belongs to all the minor term'.

But if we look a little more closely here, we discover that these interpretations are nothing but the results of a confused muddle. In the Aristotelian syllogism, there are two premisses and one conclusion, and all three are of the same form, i.e., (5). In the Indian inference, on the other hand, there is only one premiss, viz., $A\ (h, p)$, and the two relations from the *hetu* to the *pakṣa* and from the *sādhya* to the *pakṣa* are always the same relation, namely the occurrence relation A. There is an entirely superficial and fortuitous similarity between the particular syllogism illustrated in (6), and the general form of the Indian inference, viz., (3). The three terms in Aristotelian logic, and in the traditional logic which is

derived from it, are all of the same category. The Indian *pakṣa,* on the other hand, is an entirely different kind of thing from the *hetu* and the *sādhya*: it is the particular locus in which both the *hetu* and the *sādhya* happen to occur; it plays no part in the inference itself, though it is inseparable from each of its two terms. The *pakṣa* is the locus where the *hetu* occurs, and where the occurrence of the *sādhya* is doubted and sought to be established.

The difference may also be formulated thus. In Aristotle's syllogism the three terms are always related to each other through a relation of the form $B(x, y)$ or 'x belongs to y'. In the Indian syllogism there are two terms, h and s, which are always related to each other through the relation of *pervasion*; both h and s are in addition related to the locus p but only through the occurrence relation A.

Vidyabhusana's erroneous identifications and comparisons have been repeated or relied on by almost all later interpreters of Indian logic. Stcherbatsky entangles them even further in his *Buddhist Logic*, but this deserves separate treatment, and I shall return to it. Some scholars confine themselves to using the terms 'minor', 'middle' and 'major' for the three Indian terms, without referring to the function which these former terms have in Western logic (e.g., Athalye, 1930, p. 281; Kuppuswami Sastri, 1932, pp. 188–189; Bocheński, 1956, pp. 497, 501; Goekoop, 1967, pp. 11–12, 56; Matilal, 1971, pp. 128–129). Others go out of their way to relate the Indian and the Aristotelian systems, and get wrapped up in greater confusions (e.g., Foucher, 1949, pp. 117–118; Barlingay, 1965, p. 109). The only scholar I found who seems to have had an inkling that these comparisons do not hold water, is Ingalls (1951, p. 35): though he uses the Western terms when introducing the Sanskrit ones, he remarks in a footnote: "Since the relation between s and h is one of pervasion, h may be equal to s.... In such cases, it is only by an extension of the literal meanings that one can speak of 'major', 'middle' and 'minor' terms. This is one reason why I prefer to keep the Sanskrit names, 's', 'h', and 'p'" (*ibid.*, note 28). But the assumption underlying this observation is incorrect: Aristotle does consider cases where the middle and major terms are equal[3].

Turning now to Stcherbatsky we meet with a weird mixture that seems to have nothing whatsoever to do with logic. Though Stcherbatsky's translations are on the whole quite literal and reliable, his interpretations and

explanations are often extremely confused and almost always unclear. The Indian distinction between *svārthānumāna* 'inference for one's own sake' and *parārthānumāna* 'inference for the sake of others' is expressed and interpreted by Stcherbatsky by calling the second kind of inference, but not the first, 'syllogism'. Stcherbatsky is of course well aware of the Aristotelian and traditional connotations of that term. In fact, he says: "We have given the name of Syllogism to inference 'for others' because of its outward similarity with Aristotle's First Figure" (I 278; the other figures need not detain us, he says, they are 'false subtlety' anyway: I 309). As a result, chapter II of part III, which explains inference, is relatively free from Aristotelian (though not from Kantian) bias. But chapter III of part III, which deals with 'syllogism', though clearly enunciating one of its basic characteristics ("It thus consists of a general rule and its application to an individual case": I 279), uses the expressions minor, middle and major in a very confusing manner, applying 'minor' and 'major', as in traditional logic, to premisses as well as to terms.

The second volume of Stcherbatsky's *Buddhist Logic* contains the translation of Dharmakīrti's *Nyāyabindu*. In the translation of the third *pariccheda*, which deals with the *parārthānumāna* 'syllogism', many inferences are interpreted in terms of a major premiss, an example, a minor premiss and a conclusion. Though this forces the meanings of the original expressions into a very badly fitting straight-jacket, I shall confine myself to the treatment given to the concept of *pakṣa*. When this concept is introduced in the second *pariccheda*, Dharmakīrti does not refer to it by the term *pakṣa*, but by its predecessor, the term *anumeya*. Stcherbatsky translates the latter term as 'the object cognized by inference' and identifies it with the minor. In the section entitled 'Minor term', he translates the definition of *anumeya* (*anumeyo'tra jijñāsitaviśeṣo dharmī*) correctly as: "The object cognized in inference is here the substratum whose property it is desired to cognize." The term 'substratum' (*dharmin*) refers here to the locus, which has for its property (*dharma*) or specification (*viśeṣa*) the *sādhya* which occurs in it, so that the relation:

(8) *A* (*sādhya, anumeya*)

holds.

Now it is clear that the expression (8) refers itself to the conclusion of the inference. The commentary of Dharmottara on this definition reveals

a certain ambiguity of the term *anumeya* as used in this context. In Stcherbatsky's translation: "The word *here* means that the object of inference appears as a substance (a substratum) when the definition of its mark is considered (the mark being an attribute of this substance). But from another standpoint, when the deduced (conclusion) is realized, the subject of the inference would be a complex (idea of the substratum together with its property). And when the invariable concomitance (between the middle and the major terms) is considered, then the inferred fact appears as an attribute (of this substance, as the major term). In order to point out (these differences) the word *here* has been used. We call *object of inference* an object whose property, or specification, it is desired to cognize" (II 58) (*atra hetulakṣaṇe niścetavye dharmy anumeyaḥ / anyatra tu sādhyapratipattikāle samudāyo'numeyaḥ / vyāptiniścayakāle tu dharmo'numeya iti darśayitum atra grahaṇam / jijñāsito jñātum iṣṭo viśeṣo dharmo yasya dharmiṇaḥ sa tathoktaḥ*).

Stcherbatsky attaches a footnote explaining *anumeya*: "In a general sense it may mean an object which possesses the united properties of the major, the minor and the middle terms, e.g., 'the mortal man Socrates'; it is then *ekam vijñānam*. It may also mean the major term or the conclusion separately, as well as the thesis which is also the conclusion (=*pakṣa*=*sādhya*). In a special sense it means the minor term, the subject of the conclusion, and even more precisely, the underlying substratum (*dharmin*), the efficient point-instant, that underlying point of reality upon which any amount of interconnected qualities may be assembled as a superstructure" (*ibid.*, note 1).

Such muddles do not help the understanding of Indian logic. In fact, no logician who reads them can fail to lose whatever regard he might ever have had for that subject. And yet, Stcherbatsky was partly correct in his interpretations. The confusion is partly due to the Indian logicians themselves, and the rest results from imposing upon their expressions an Aristotelian framework that has nothing to do with it. The ensuing jumble may be sorted out and clarified along the following lines.

As we have seen, the conclusion of an Indian inference may be expressed by $A(s, p)$ (8). Now Dharmottara referred to three things that may be called *anumeya* in this conclusion because each of them may be used to express what it is that is concluded: the *dharmin* p, which has s for its property: the *dharma* s, which p has for its property; and the complex

(*samudāya*) of the *dharmin* together with its *dharma*. The reason for this undecidedness is that the Buddhist logicians failed in this context to properly express that the conclusion is the *relation* $A(s, p)$: they confined themselves to expressions denoting terms and 'complexes' of terms. Stcherbatsky compounded this error by imposing the Aristotelian framework he had adopted, and so came to speak of a term in the inference which may be either the major or the minor – as if such a terminology should ever be introduced for any other reason than in order to distinguish between the two. The two facts that the terms *sādhya* and *pakṣa* are used by Indian logicians in such a way that either of them can be used to state the conclusion, and that this was done without the entire edifice falling to pieces, should have alerted Stcherbatsky that these terms could not possibly denote the same concepts as the Aristotelian major and minor terms.

Though the Buddhist logicians did not clearly express the relational character of the conclusion of the inference in the contexts in which they introduced and discussed terms such as *hetu*, *sādhya* and *pakṣa*, they did so in other contexts. But to confuse matters again, they there refer to this relation by the term *pakṣa*. Accordingly, *pakṣa* refers sometimes to p, and sometimes to $A(s, p)$. This is not as strange as it may seem, though it is certainly bad logic. The occasional confusion between a term and a sentence is not uncommon in Indian logic, and it is undoubtedly related to the structure of the Sanskrit language, where a certain type of expression can either refer to a noun or to a sentence (cf. Staal, 1965, p. 181; 1971, p. 200). Thus, *parvato vahnimān* can mean either 'the mountain possesses fire' or 'the mountain which possesses fire'; and this may depend on the context. A more accurate way of expressing the fact that the term *pakṣa* is ambiguous in this way, is by saying that it refers either to $A(s, p)$, or to $\imath p A(s, p)$, which may be read as: 'that p such that $A(s, p)$' (rather than just p).

Stcherbatsky does not explicitly refer to this distinction, but he implicitly distinguished between the two meanings by translating *pakṣa* sometimes as *subject* (or similar terms, in the contexts already referred to) and sometimes as *thesis*. The latter translation is adopted in II 153 and following, where he deals with the definition of *pakṣa* in the *Nyāyabindu*. Later scholars have felt this same ambiguity. For example, Tachikawa writes in the notes to his excellent translation of the *Nyāyapraveśa*:

"According to the definition given by Śaṅkarasvāmin, the *pakṣa* is an object which the arguer wishes to prove to be qualified by a property, not the statement of the form: A property-possessor is qualified by a property. The statements, however, are here taken as examples of the *pakṣa*, which seems to indicate some laxity in the usage of the term *pakṣa*" (Tachikawa, 1971, 132, note 9)[4].

The *Nyāyapraveśa* of Śaṅkarasvāmin contains yet another use of *pakṣa*, interesting especially because the ambiguity of the Sanskrit original is resolved in the Chinese translation. Tachikawa renders the relevant passages correctly but has to resort to rather free translations. In these contexts, the term *pakṣa* refers to what the *sapakṣa* and the *vipakṣa* have in common. This can of course be said to be *pakṣa* from a morphological point of view, if the terms are taken to be mentioned, not used. But the meaning of the term which is thus constructed does not correspond to the more common meanings of the term *pakṣa* in Indian logic. In fact, what *sapakṣa* and *vipakṣa* have in common excludes what is ordinarily called the *pakṣa*. For *sapakṣa* is defined as any locus, *different from the pakṣa*, where the *sādhya* occurs; and *vipakṣa* as any locus where the *sādhya* does not occur (see Staal, 1962, 634–635).

This special sense of *pakṣa* occurs first in the discussion of a reason (*hetu*) which is fallacious because it is common to both the *sapakṣa* and the *vipakṣa*. An example is: 'sound is permanent because it is an object of valid cognition' (*śabdaḥ prameyatvān nityaḥ*: Tachikawa, 1971, 124, 142). Here the *hetu* is fallacious 'because the property of being an object of valid cognition is common to both permanent and impermanent things' (*nityānityapakṣayoḥ sādhāraṇatvād*). In other words, since both permanent and impermanent things can be known (everything can be known in the Nyāya view), it is not proper to conclude that sound is permanent from the fact that it can be known.

The Chinese translators render *sapakṣa* and *vipakṣa* each by a combination of two characters. The two pairs have one character in comomn, which is however different from the character used to translate *pakṣa*. This particular structure enables the Chinese translators to avoid the ambiguity of the Sanskrit original. Thus in Hsüan Tsang's translation of the *Nyāyapraveśa*, entitled 因明入正理論 (*Yin ming ju cheng li lun*: *T*, 1630, Vol. 32, 11a ff.), *pakṣa* is rendered by 宗, *sapakṣa* by

同品 and *vipakṣa* by 異品. But in the above passage, translated as 常無常品皆共此因 (T.1630, 11c: 20), the term *pakṣa* is rendered by 品, the character which the expressions for the *sapakṣa* and the *vipakṣa* have in common.

Thus the Chinese translation avoids the confusing ambiguity of the original and expresses its logical structure more adequately. This should come as a surprise to those who maintain that the Chinese translators did not appreciate the subtler points of the Sanskrit originals, but merely replaced words by characters in a mechanical manner, the results being fit for recitation and perhaps meditation, but not susceptible to further rational analysis. In this instance, at least, Hsüan Tsang's translation is decidedly superior to many of the modern translations I have been concerned with in the above attempt to clear some of the interpretative jungle that surrounds the concept of *pakṣa* in Indian logic.[5]

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NOTES

[1] The translation 'inferendum' was suggested to me by Mr. Paul Z. Panish.

[2] Aristotle gives different definitions in different contexts, and the definitions given for the first figure do not apply to the others. See Łukasiewicz (1957) pp. 28–82 and Patzig (1959) = Patzig (1968), Chapter IV.

[3] In *An. pr.* B5, 75b 35 ff. and in *An. post. A*3, 73a 6ff., Aristotle considers arguments where all three terms are convertible with each other, which is at least as strong a claim as that of extensional equality.

[4] The same 'laxity' is present when Tachikawa takes *pakṣa* to be the sense of *sādhya* in *anitye śabde sādhye* (Tachikawa, 1971, p. 132, note 9).

[5] I am very grateful to Professor Lewis R. Lancaster with whom I taught a seminar on the *Nyāyapraveśa* and who initiated me into the intricacies of its Chinese translation, and to Professor Michael Frede who improved my account of Aristotle's logic and provided the references in note 3.

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Note added in proof. After sending this paper to the press I read an unpublished manuscript by Professor M. Tachikawa, entitled 'On *pakṣa*', in which very similar conclusions are reached.

NEGATION AND THE LAW OF CONTRADICTION IN INDIAN THOUGHT: A COMPARATIVE STUDY

By J. F. Staal

IN the fourth chapter of book Γ of the *Metaphysica* Aristotle deals with the principle of contradiction. This law is formulated as follows: 'it is impossible for anything at the same time to be and not to be '.[1] Let us imagine, says Aristotle, that somebody wished to oppose this view. Our opponent cannot hold a view which contradicts the law of contradiction without assuming the validity of this law itself: for otherwise he is not even denying what we are saying. The only alternative for him, then, will be to say nothing. But this is absurd: 'for such a man, as such, is from the start no better than a vegetable '.[2]

We are often told that Indian philosophers do not accept the law of contradiction. This may well be one of the causes of the neglect of Indian thought by Western philosophers: for nobody desires to study a body of propositions when he is at the same time told that their contradictories may hold as well. Is it perhaps a new—and according to some superior—kind of logic to which we are invited to accustom ourselves? Many may not feel the need for what would amount to a radical conversion. Nevertheless such a requirement seems implied in statements like the following, where a Western scholar speaks about principles such as the law of contradiction: 'But the Eastern mind is convinced that, taking together all the circumstances in which we need our thinking to give us adequate guidance, it would be fatal to allow ourselves to be enslaved by these principles '.[3] After stating this the author goes on to quote a Buddhist principle which indeed contradicts the law of contradiction.[4] The question arises whether 'the Eastern mind' has in its entirety thrown the law of contradiction overboard.

The aim of the present study is to see how Indian thinkers treat contradictions and what explicit rules are given for the treatment of contradictions. If

[1] *Met.*, Γ 4, 1006 a 3–4. Other statements of this law have been formalized by I. M. Bocheński, *Ancient formal logic*, Amsterdam, 1951, 38–40; cf. also J. L. Ackrill, *Mind*, LXII, 1953, 110–12.

[2] ibid., 14–15; cf. translation of W. D. Ross, Oxford, 1908.

[3] E. A. Burtt, 'What can Western philosophy learn from India?', *Philosophy East and West*, V, 1955–6, 202.

[4] The principle called *catuṣkoṭi*. See P. T. Raju, 'The principle of four-cornered negation in Indian philosophy', *Review of Metaphysics*, VII, 1954, 694–713; T. R. V. Murti, *The central philosophy of Buddhism*, London, 1955, 129–31, 146–8. The earliest occurrence perhaps in the Pali canon is *Majjhima-nikāya, sutta* 63 (transl. H. C. Warren, *Buddhism in translations*, Cambridge, Mass., 1946, 117–22). For a formalization see: H. Nakamura, 'Buddhist logic expounded by means of symbolic logic', *Journal of Indian and Buddhist Studies*, VII, 1958, 384–5. The same formalization in an earlier Japanese version (in *Indogaku Bukkyōgaku kenkyū*, III, 1954, 223–31) was criticized by R. H. Robinson, 'Some logical aspects of Nāgārjuna's system', *Philosophy East and West*, VI, 1957, 302. The validity of this criticism may be questioned.

Indian philosophers are either unaware of contradiction or deny the validity of the principle of contradiction, the structure of Indian logic would seem to be so fundamentally different from the structure of Western logic, that the possibility of mutual understanding may become questionable. If, on the other hand, the principle of contradiction is either applied implicitly or laid down explicitly, this may be variously interpreted : there may be historical connexions between India and the West which account for certain influences ; there may be a connexion between the logical law and the structure of Indo-European, manifest in both Greek and Sanskrit ; there may be a general linguistic background to the law of contradiction ; or finally, the law may be a universal logical law—whatever that may mean. A discussion of the question, whether Indian philosophers are to be considered vegetables, may therefore constitute a chapter of comparative logic.

The Sanskrit term which seems to correspond most closely to the Western term contradiction is derived from a root *sidh-* meaning ' to keep away '. The noun *sedha* derived from this root denotes ' keeping away ', and the nouns *niṣedha* and *pratiṣedha* have a similar meaning, which can be sometimes further specified as ' prohibition, negation '. The latter term leads to the formation of the noun *vipratiṣedha* meaning ' mutual prohibition ' or ' contradiction '.

An early technical or semi-technical use of the term *vipratiṣedha* occurs in Āpastamba's *Śrauta-sūtra* (between 400 and 200 B.C.), where during the offering the Vedas are assigned to the various sacrificers in the following manner [1] : ' The *hotṛ* sacrifices with the Ṛgveda ; the *udgātṛ* with the Sāmaveda ; the *adhvaryu* with the Yajurveda ; the *brahman* with all. When it is expressly said, or in case of contradiction (*vipratiṣedha*), another (priest) may sacrifice '. Instead of *vipratiṣedhāt* the partly parallel text of Hiraṇyakeśin's *Śrauta-sūtra* has *asaṃbhavāt* ' if it is impossible '. Both passages refer to cases where a priest is unable to sacrifice in accordance with what is prescribed for him on account of one rule or one established practice, because he is already engaged on account of another rule or other rules.[2] The last *sūtra*, therefore, formulates a principle which holds in cases of mutual contradiction between two rules applicable to the same situation. It is a rule for the manipulation of other rules, a *paribhāṣā* ' meta-rule ', and it is accordingly placed in the last part of the *Āpastamba-śrauta-sūtra*, which consists of the *yajña-paribhāṣā-sūtrāṇi* ' meta-rules regarding the sacrifice '. The term *vipratiṣedha* is a term which applies to the contradictions between formulated rules, and not for instance between entities.

It is characteristic for Indian thought that at an early stage of development the distinction between language and meta-language was made. This is connected with the fact that the subject-matter for various kinds of investigations

[1] *Āpastamba-śrauta-sūtra*, 24.1.16–20.

[2] W. Caland in his translation *ad loc.* specifies this by the following example : ' Z. B. muss ein anderer als der Adhvaryu, da dieser beschäftigt ist, das Opfertier losbinden '.

was a large body of linguistic material, the Vedic texts which were considered transcendent and revealed (*śruti*). The *sūtra* literature on the one hand embodies Vedic passages and continues to prescribe forms of activity in a Vedic fashion, and on the other hand interprets Vedic passages. This literature therefore does not only deal with ritual activity, but deals also with statements regarding ritual activity. In the first respect it constitutes a language dealing with the ritual as object material, in the second respect it constitutes a meta-language dealing with the language which deals with the ritual. The *paribhāṣā* rules, more specifically, were explicit meta-linguistic rules for the manipulation of Vedic passages.

With the development of grammar there is a shift in two respects. On the one hand the object material is new : it is neither the ritual, nor Vedic passages dealing with the ritual, but it is the spoken language (*bhāṣā*) and, to a limited extent, the Vedic language (*chandas*).[1] On the other hand it is not Vedic passages, but the rules of grammar themselves which are the subject of a meta-linguistic investigation. The same term, *paribhāṣā*, applies to rules of this meta-language. The importance of these meta-rules increases when the rules of the grammar of Pāṇini are accepted as authoritative.

In dealing with linguistic problems the grammatical description is mainly confined to the analysis of words (*pada*) and grammar has therefore been called *pada-mīmāṃsā* ' investigation into words '. While it is sometimes rightly stressed that the Sanskrit grammarians neglected or paid little attention to syntax, it is not always realized that grammar was in this respect supplemented by the *vākya-mīmāṃsā* ' investigation into sentences ', another name for the most orthodox among the systems of philosophy, more generally known as Pūrva-mīmāṃsā, Karma-mīmāṃsā, or merely Mīmāṃsā.[2] Some syntactical principles of Mīmāṃsā will occupy us here. This philosophical system is the direct successor to the *sūtra* literature, for it systematizes the interpretation of Vedic sentences and evolves general canons of interpretation.[3] Also here general rules of a meta-linguistic nature, dealing with the interpretation of Vedic statements, are given. Such meta-rules are often called *nyāya*. These rules are further used and developed in *dharmaśāstra*. The term *nyāya* is later commonly used to denote logic and the system of logic. We have emphasized elsewhere that the early use of the term *nyāya* as synonymous with *paribhāṣā* may be an indication that elements and laws of Indian logic can be traced back to the discussion on problems of language and meta-language in earlier systems and especially in grammar.[4]

[1] See especially P. Thieme, *Pāṇini and the Veda*, Allahabad, 1935, 67 sq. ; L. Renou, *La Durghaṭavṛtti de Śaraṇadeva*, I, 1 (introduction), Paris, 1940, 7–8.

[2] cf. L. Renou, *Études védiques et pāṇinéennes*, VI (Le destin du Véda dans l'Inde), Paris, 1960, 66.

[3] Mīmāṃsā is closest to the *paribhāṣā* sections of the *sūtras*. See D. V. Garge, *Citations in Śabara-bhāṣya*, Poona, 1952, 50 sq.

[4] J. F. Staal, ' The theory of definition in Indian logic ', *JAOS*, LXXXI, 2, 1961, 124.

Problems of contradiction are dealt with in this meta-linguistic context in grammar as well as in Mīmāṃsā.[1] Pāṇini (*c.* 350 B.C.) gives the following meta-rule: 'in case of contradiction (between two rules) the later (rule) is to be applied'.[2] Here 'later rule' denotes a rule which occurs later in the sequence of rules in Pāṇini's grammar.[3] Patañjali (? second century B.C.) discusses this *sūtra* in the *Mahābhāṣya* [4] and pays special attention to the term *vipratiṣedha*. After giving the etymology he explains it by *itaretara-pratiṣedha* and *anyo'nya-pratiṣedha* 'mutual prohibition'. He proceeds to quote the following *vārttika*: *dvau prasaṅgāv anyārthāv ekasmin sa vipratiṣedhaḥ* 'if two rules with different meaning apply to one (word) this is *vipratiṣedha*'.[5] He adds that this application should be possible 'at the same time' (*yugapad*) and gives the following example. According to Pāṇini, 7.3.102, long *ā* is substituted for final *a* of a nominal stem before terminations beginning with *y* or *bh*.[6] This enables us to form *vṛkṣāya* 'to the tree', *vṛkṣābhyām* 'to both trees', and apparently **vṛkṣābhyaḥ* 'to trees', from the nominal stem *vṛkṣa-* 'tree'. The following *sūtra*, 7.3.103, prescribes the substitution of *e* for this *a* before a plural termination beginning with *bh* or *s*. This accounts for the formation of *vṛkṣeṣu* 'among trees'. But as *-bhyaḥ* is a plural termination, the second *sūtra* applies also to this case and enables us to form *vṛkṣebhyaḥ* 'to trees'. The two rules form in this respect a *vipratiṣedha* 'contradiction'. Then, according to the *paribhāṣā*, as the second rule comes after the first, the second prevails and *vṛkṣebhyaḥ* is explained while **vṛkṣābhyaḥ* is not. We are perhaps inclined to regard the second rule as an exception (*apavāda*) to the first, but this does also produce the same result: for there is a *paribhāṣā* which states that the exception is stronger than the general rule.[7]

The above discussion can be formalized along the following lines. Let the *sūtras*, which are propositions, be ordered (as they are in Pāṇini) and be denoted by $\phi_1, \phi_2, \ldots$, and let $\phi_i < \phi_j$ denote that ϕ_i precedes ϕ_j in this list.[8] In addition let $\phi_i \circ \phi_j$ denote that ϕ_i and ϕ_j are contradictory propositions. Now Pāṇini's propositions generally deal with linguistic predicates F(x), G(x), . . . which have individual words or other sounds x, . . . as their values.

[1] See L. Renou, 'Connexions entre le rituel et la grammaire en sanskrit', *JA*, CCXXXIII, 1941–2, 116–17, also for what follows.

[2] Pāṇini, 1.4.2: *vipratiṣedhe paraṃ kāryam.* This principle is not valid for the *Tripādī* (Pāṇini, 8.2–4): cf. H. E. Buiskool, *Pūrvatrāsiddham*, Amsterdam, 1934.

[3] It is irrelevant in the present context that the term *param* in the *sūtra* may mean desirable (*iṣṭam*), as it is interpreted by Patañjali (see Buiskool, op. cit., 66–7, 71–6).

[4] *ad loc.*; ed. Kielhorn, I, 304.

[5] See L. Renou, *Terminologie grammaticale du sanskrit*, Paris, 1957, 280 (s.v. *vipratiṣedha*).

[6] This rule is discussed in another context by the present author in 'A method of linguistic description: the order of consonants according to Pāṇini', *Language* [to be published, 1962].

[7] cf. *paribhāṣā* 38 of Nāgojī Bhaṭṭa's *Paribhāṣenduśekhara* ed. and transl. F. Kielhorn, Bombay, 1868, 34, 320; cf. also L. Renou, *Études védiques et pāṇinéennes*, II, Paris, 1956, 143.

[8] If *param* means 'desirable', $\phi_i < \phi_j$ can be interpreted to mean that ϕ_j is more desirable than ϕ_i.

As most rules state that a certain predicate holds under certain conditions, we may consider all and only those ϕ_i which can be written in the form :

$$(x)\ [F_i(x) \rightarrow G_i(x)]. \tag{1}$$

According to the definition of *vipratiṣedha*, $\phi_i \circ \phi_j$ if and only if :

$$\sim (Ex)\ [G_i(x) \wedge G_j(x)]. \tag{2}$$

The *paribhāṣā* states (in the following formula connectives and parentheses are printed in bold face in order to denote that they are used in the formalization of the meta-theory) :

$$\mathbf{[\ (}\ \phi_i < \phi_j\ \mathbf{)\ \wedge\ (}\ \phi_i \circ \phi_j\ \mathbf{)\ ]} \boldsymbol{\rightarrow} \phi_j\ . \tag{3}$$

This *paribhāṣā* presupposes an actual contradiction. For (3) is only meaningful if ϕ_i and ϕ_j apply to the same case, i.e. if :

$$(Ex)\ [F_i(x) \wedge F_j(x)]. \tag{4}$$

However, (4) and (1) yield :

$$(Ex)\ [G_i(x) \wedge G_j(x)], \tag{5}$$

which contradicts (2). Then, if $\phi_i < \phi_j$, we derive from (3) the proposition ϕ_j or : $(x)\ [F_j(x) \rightarrow G_j(x)]$. As there is an x such that $F_j(x)$ according to (4), we can derive $G_j(x)$ for that x.

This argument depends on a contradiction which is assumed to hold between (2) and (5), i.e. on a law of contradiction for propositions of the form :

$$\sim (\phi \wedge \sim \phi). \tag{6}$$

The analysis therefore shows what the formulation of the *paribhāṣā* already suggests, namely that the argument presupposes the validity of the principle of contradiction.

The *Kāśikā*,[1] a later commentary (seventh century A.D.) on Pāṇini's grammar defines *vipratiṣedha* in the same way, having first characterized it as *tulya-bala-virodhaḥ* ' opposition (between two propositions) of equal force '. The same definition is given by Uvaṭa in his commentary on the *Vājasaneyi-prātiśākhya*.[2] The term *virodha*, which according to the above definition has a wider denotation than *vipratiṣedha*, is also utilized for contradictions between two possible interpretations in the *sūtra* literature.[3]

In Mīmāṃsā, where the same *paribhāṣā* holds,[4] both *niṣedha* and *pratiṣedha* denote ' prohibition '. As in India the science of grammar is primarily descriptive and not prescriptive,[5] the grammatical *sūtras* are propositions where the verb occurs in the *indicative* mood or the construction is purely nominal. Mīmāṃsā, on the other hand, is primarily concerned with Vedic injunctions which contain a verb in the *optative* mood. The principal part of such an injunction is the optative verb form, and the principal part of the optative

[1] *ad* Pāṇini, 1.4.2.
[2] Renou, *Terminologie*, 495.
[3] See Renou, in ' Connexions ', *JA*, CCXXXIII, 1941–2, p. 117, n. 2.
[4] Although here *param* has a different meaning : see above, p. 55, n. 1.
[5] cf. the article quoted above, p. 54, n. 4.

verb form is the ending, not the verbal root. This doctrine is first formulated for positive injunctions (*vidhi*), but is subsequently transferred to negative injunctions or prohibitions. Such a view can be arrived at on account of the use of prohibitions such as *na bhakṣayet* 'he shall not eat', which in English should be interpreted as 'he shall-not eat', not as 'he shall not-eat'. Such a negative injunction does not enjoin an action which is not-eating, i.e. any definite action different from eating, but it prohibits eating.[1]

This distinction is interesting and seems to go a step beyond the Aristotelian doctrine of negation which is at the base of the modern logical notation. Aristotle evolved a theory of negation for propositions which will be called 'the original doctrine of negation'. This theory was extended in one direction to quantified sentences, thus arriving at the distinction between contrary and contradictory, and in another direction to modal propositions. The philosophers of the Mīmāṃsā system extended a similar underlying doctrine of negation to a class of non-indicative propositions, namely injunctions. To express this precisely and formally we shall need a special notation, which may be arrived at by first considering Aristotle's extensions.

In the *De interpretatione* Aristotle gives the original doctrine of negation. He says that the negation of 'man walks' (τὸ ἄνθρωπος βαδίζει) is not 'not-man walks' (τὸ οὐκ ἄνθρωπος βαδίζει), but 'man does not walk' (τὸ οὐ βαδίζει ἄνθρωπος).[2] This is reflected in the modern notation, where the negation of $F(x)$ is not defined as $F(\sim x)$, but as $\sim F(x)$.[3] The latter expression is in modern logic formed according to rules of formation so that it means $\sim [F(x)]$. Other expressions such as $(\sim F)(x)$ are not defined and can only be expressed adequately when use is made of Church's λ-operator (e.g. $[\sim \lambda x.F(x)](x)$, provided the negation sign is defined in this context).

In the theory of quantified sentences we arrive at contradictories (ἀντικείμενα) if the quantifier is negated, and at contraries (ἐναντίαι) if the copula, i.e. the verb, is negated.[4] This can be formalized along Aristotelian lines by considering the four kinds of quantified sentences as follows:

SaP	$(x)F(x)$			(7)
SeP	$(x) \sim F(x)$	or:	$\sim (Ex)F(x)$	(8)
SiP	$(Ex)F(x)$			(9)
SoP	$(Ex) \sim F(x)$	or:	$\sim (x)F(x)$	(10)

Here (7) and (10) are contradictories, (8) and (9) are contradictories, (7) and (8) are contraries, and (9) and (10) are contraries (traditionally, subcontraries).

In Aristotle's modal logic a detailed theory is given for the relationship between negation and the four modal functors.[5] It is not explicitly stated what

[1] *Mīmāṃsā-nyāya-prakāśa*, ed. and transl. F. Edgerton, New Haven, 1921, sections 320–8.

[2] *De int.* 12, 21 b 1–8.

[3] See J. F. Staal, 'The construction of formal definitions of subject and predicate', *TPS*, 1960, 89–103.

[4] See, e.g., Bocheński, *Ancient formal logic*, 37.

[5] See, e.g., Bocheński, op. cit., 59.

is the negation of the individual modal functors, for example the negation of the necessity functor N[F(x)] 'it is necessary that F(x)'. Hence it is uncertain whether this negation should be interpreted as $\sim$ N[F(x)] 'it is not necessary that F(x)' or as N[$\sim$ F(x)] 'it is necessary that $\sim$ F(x)'. Aristotle implicitly accepts the first alternative, so that $\sim$ N[F(x)] actually seems to denote ($\sim$ N)[F(x)]. It is obvious that special formation rules would be needed if this situation were to be fully expressed.

The Mīmāṃsā thinkers consider exactly this question. Let the injunction 'he shall eat', which can be considered derived from the proposition 'he eats', be denoted by N[F(x)], where F(x) denotes 'he eats'. This formalization is suggested by the fact that an injunction 'he shall eat' can under certain circumstances be interpreted as a necessary sentence 'it is necessary that he eats'. The Mīmāṃsā doctrine then states that a prohibition (*niṣedha*) or the negation of an injunction N[F(x)] is not N[$\sim$ F(x)] but $\sim$ N[F(x)], just as the negation of 'he shall eat' is not 'he shall not-eat' but 'he shall-not eat'. Here also $\sim$ N[F(x)] denotes ($\sim$ N)[F(x)]. The formation rules required here presuppose that along with the injunctive functor N a prohibitive functor ($\sim$ N) has been introduced at the start. This requirement is fulfilled in Mīmāṃsā, where the Vedic utterances are initially subdivided into five groups, including along with *vidhi* 'injunction' also *pratiṣedha* or *niṣedha* 'prohibition'.[1]

The question arises whether any meaning is to be attached to the expression N[$\sim$ F(x)], just as it is not impossible to conceive that a meaning could be attached to the expression F($\sim$ x), which in modern logic is not a well-formed expression. The Mīmāṃsakas denote all cases of a negation of an injunction which are not *pratiṣedha* or *niṣedha* by the term *paryudāsa* which is generally translated as 'exclusion'. Their main doctrine in this respect is succinctly expressed in the following verse, where the negative is denoted by *nañ* :

paryudāsaḥ sa vijñeyo yatro'ttarapadena nañ
pratiṣedhaḥ sa vijñeyaḥ kriyayā saha yatra nañ

'exclusion (*paryudāsa*) is to be understood where the negative (is connected) with the next word [2]; prohibition (*pratiṣedha*) is to be understood where the negative (is connected) with the verb(al ending)'.[3]

There are two kinds of 'next words' with which the negative can be connected : (1) a verbal root ; (2) a noun. We shall consider each of these two shortly.

(1) There are sentences [4] such as *nekṣeta* 'he shall not look' where nothing

[1] See, e.g., *Mīmāṃsā-nyāya-prakāśa*, section 10.

[2] The term *uttarapada* literally denotes the second member of a compound. According to the Sanskrit grammarians the negative particle combines with a following noun into a nominal compound (generally either *tatpuruṣa* or *bahuvrīhi*), so that the following noun is appropriately designated by the term *uttarapada*. Since *paryudāsa* applies also to verbs, *uttarapada* has been here translated by 'next word'.

[3] *Mīmāṃsā-nyāya-prakāśa*, section 330.

[4] *Mīmāṃsā-nyāya-prakāśa*, sections 332–40.

can be prohibited because the sentence is introduced as a positive injunction by a kind of injunctive functor, e.g. because the words are preceded by the phrase *tasya vratam* . . . 'his vows are . . .'. Such a sentence positively enjoins something opposed to looking (*īkṣaṇa-virodhī*), which can be formulated by means of the expression 'not-look' (*nekṣe*, i.e. in Edgerton's words 'the combination *nekṣeta* "he shall not look" minus the optative ending').[1] This is expressed by the formula $N[\sim F(x)]$, where $\sim F(x)$ denotes 'not-look'.

(2) There are also sentences of quite a different type, where a noun (or, in logic, a term) is negated,[2] for example *nānuyājeṣu yeyajāmahaṃ karoti* 'not at the after-sacrifices does he say *ye-yajāmahe*'. Here the context shows that this does not mean *anuyājeṣu yeyajāmahaṃ na kuryāt* 'at the after-sacrifices he shall not say *ye-yajāmahe*', but it means *anuyājavyatirikteṣu yeyajāmahaṃ kuryāt* 'at sacrifices other than the after-sacrifices he shall say *ye-yajāmahe*'. This can only be expressed formally if the injunction is not derived from a predicate but from a relation, for instance $F(x, y)$ denoting: 'at the after-sacrifices (x) he says *ye-yajāmahe* (y)'. Hence the injunction can be written as $N[F(x, y)]$ and this kind of negation or *paryudāsa* as $N[F(\sim x, y)]$, which again is a positive injunction.

In grammar an analogous distinction is made.[3] Exclusion and prohibition are respectively called *paryudāsa-pratiṣedha* and *prasajya-pratiṣedha*,[4] and an almost identical verse is quoted:

paryudāsaḥ sa vijñeyo yatro'ttarapadena nañ
prasajyapratiṣedhas tu kriyayā saha yatra nañ.

Renou, who mentions this verse, quotes the following example from the *Nyāsa* of Jinendrabuddhi (? eighth century A.D.).[5] The interpretation of the negative prefix *a-* in the word *a-kartari* occurring in Pāṇini, 3.3.19, *akartari ca kārake saṃjñāyām*, is under discussion. If this negation is interpreted as *paryudāsa* the meaning would be '(The suffix *ghañ* is applied) to case relationships different from the nominative'. If the negation is interpreted as *prasajya* the meaning would be '(The suffix *ghañ* is) not (applied) to the nominative (but is applied) to case relationships'. The first interpretation should be rejected, for the nominative is a case relationship and the word *kāraka* 'case relationship'

[1] Edgerton, op. cit., p. 170, n. 222.

[2] *Mīmāṃsā-nyāya-prakāśa*, sections 341–50. These sentences reflect Vedic sentences where the second object follows the verb but is preceded by *na*, e.g. *Aitareya-Brāhmaṇa*, 1.17.13, *prayājān evātra yajanti nānuyājān* 'in this case they offer the fore-sacrifices, not the after-sacrifices'. See J. Gonda, *Four studies in the language of the Veda*, 's-Gravenhage, 1959, 7–70 ('Amplified sentences and similar structures', 60).

[3] The Mīmāṃsā distinction was also adopted in *dharmaśāstra*. It occurs in a medieval work on *gotra* and *pravara*: see J. Brough, *The early Brahmanical system of Gotra and Pravara: a translation of the Gotra-pravara-mañjarī of Puruṣottama-paṇḍita*, Cambridge, 1953, p. 70, n. 3.

[4] cf. Edgerton, op. cit., p. 167, n. 219.

[5] Renou, *Durghaṭavṛtti*, 114; also Renou, *JA*, CCXLV, 2, 1957, p. 131, n. 9, and *Terminologie*, 202, 230.

would hence be superfluous, which conflicts with a well-known economy criterion.[1]

The difference between on the one hand the grammatical distinction between two types of negation and on the other hand the Mīmāṃsā distinction between three types reflects the fact that grammar is descriptive and deals with propositions, while Mīmāṃsā is prescriptive and deals with injunctive functors. In formalizing the grammatical propositions, expressions of the type F(x) are sufficient and there is no need for an injunctive functor N. The above distinction could for instance be formalized by expressing the proposition 'the suffix *ghañ* (a) is applied to x' by F(a, x) and by abbreviating the nominative as n and a case relationship as c. Then the *paryudāsa* interpretation is given by :

$$F(a, c \wedge \sim n), \tag{11}$$

while the *prasajya* interpretation is given by :

$$F(a, c) \wedge \sim F(a, n). \tag{12}$$

The second type of *paryudāsa* in Mīmāṃsā comes into being on account of the fact, that the negation can be attached to either N or F. This is impossible in grammar. The relation between Mīmāṃsā and grammar can be summarized in the following table, where the characteristic structure of each operation is given by means of a formal expression :

Mīmāṃsā	Grammar
vidhi : N[F(x)]	*sūtra* : F(x)
niṣedha : (∼ N) [F(x)]	*prasajya-pratiṣedha* : ∼ F(x)
paryudāsa II : N[F(∼ x)]	*paryudāsa-pratiṣedha* : F(∼ x)
paryudāsa I : N[(∼ F)(x)]	——

The Mīmāṃsā concepts of *niṣedha* and of two types of *paryudāsa* constitute a logical system of negations which is quite different from the Aristotelian doctrines of negation which are at the base of modern formulations and also of the modern symbolical notation. We have seen that the formation rules which express the structure of the modern notation and determine whether an expression is well-formed or not, depend on Aristotle's analysis of negation. It is important to realize that these differences in logical structure between India and the West do not imply and are not implied by similar differences in the *total* linguistic structure of the languages in which the logical doctrines were evolved. The linguistic background of the Indian concepts in Sanskrit is quite expressible and intelligible in, e.g., Greek or English. This may go far to show that logical doctrines may have been evolved along the lines suggested by various *partial* structures of ordinary language. The limitations of logical systems, Western as well as Indian, can be studied when it is precisely known which linguistic structure of a language system is at the background of a particular logical system.

In the present context this may be illustrated by writing in a table : A, the

[1] cf. the article quoted above, p. 55, n. 6.

name of the operation concerned; B, the formal expression for it; and C, the linguistic structure to which it is related, as exemplified by a simple English sentence:

A	B	C
	F(x)	the door is locked
vidhi	N[F(x)]	the door should be locked
niṣedha	(∼ N) [F(x)]	the door should not be locked
paryudāsa I	N[(∼ F) (x)]	the door should be unlocked
paryudāsa II	N[F(∼ x)]	another door should be locked

While we find in the Mīmāṃsā doctrines a very refined theory of the negation of injunctions, there is no discussion, apparently, of a principle of contradiction. At first sight the reason for this may seem to be that all injunctions which Mīmāṃsā discusses are Vedic statements which are considered revealed texts (*śruti*), so that contradictions are *a priori* excluded. The Mīmāṃsā position is similar to that of any other hermeneutic system of thought which attempts to reconcile a number of statements which are not necessarily compatible, such as some theological systems in the Western monotheistic religions. Historically this fact may partly explain the origination of certain logical doctrines concerning negation. But the inner structure of the logical concepts themselves explains the absence of a law of contradiction. This can be shown for each of the negations considered earlier. In terms of Western logic we should be prepared to find:

$$\sim (N[F(x)] \wedge \sim \{N[F(x)]\}), \qquad (13)$$

for this is nothing but a substitution result of the law of contradiction $\sim (A \wedge \sim A)$. This is no compelling reason, however, to be certain that each of the following principles should hold:

niṣedha: $\sim \{N[F(x)] \wedge (\sim N)\ [F(x)]\}$ (14)
paryudāsa I: $\sim \{N[F(x)] \wedge N[(\sim F)(x)]\}$ (15)
paryudāsa II: $\sim \{N[F(x)] \wedge N\ [F(\sim x)]\}$, (16)

for these cannot be all considered direct substitution results from $\sim (A \wedge \sim A)$. That (16) need not be valid is also intuitively clear. This may illustrate the special character of the negations considered here. For the proof of (14), (15), and (16) would depend respectively on proofs of the following three equations:

$$(\sim N)\ [F(x)] = \sim \{N[F(x)]\} \qquad (17)$$
$$N[(\sim F)(x)] = \sim \{N[F(x)]\} \qquad (18)$$
$$N[F(\sim x)] = \sim \{N[F(x)]\}. \qquad (19)$$

If these could be proved, however, each of the three negations considered here would be identical with the Aristotelian negation.

While the law of contradiction need not necessarily hold for injunctions which are always injunctions enjoining action, the same law does hold for the results of the activities based upon these injunctions. In the Sanskrit terminology this can be expressed by saying that the law of contradiction need not

hold in the realm of what is to be established (*sādhya*), but holds in the realm of what is established (*siddha*). The philosophers of the Uttara-Mīmāṃsā or Vedānta of the Advaita school rejected the Mīmāṃsā interpretation of all Vedic sentences as injunctions dealing with *sādhya*. These Vedāntins considered either all or at least some of the Vedic utterances as dealing with *siddha*. The law of contradiction, therefore, is accepted by the Advaitins for Vedic sentences. Within Indian philosophy this is an extremely important development: the consideration of certain authoritative statements, especially the 'great statements' (*mahāvākya*) in which the Advaitins are especially interested, as propositions, leads to the problem of how such propositions are related to the reality which they describe, and hence to the problem of truth. This is expressed in the Advaita doctrine that the truth regarding an object is 'dependent upon the object' (*vastutantra*).

In the following two passages of the *Brahmasūtrabhāṣya* of the famous Advaita philosopher Śaṅkara (eighth century A.D.) this topic is lucidly expounded. In the first [1] Śaṅkara stresses the fact that option (*vikalpa*) is possible with respect to injunctions only. Paradoxically these injunctions are exemplified by sentences where the verb occurs in the indicative; but this is not essential, for philosophy may free itself from language and Śaṅkara explicitly speaks about *vidhi* and *pratiṣedha*. There is option, then, according to Śaṅkara, when we meet with positive and negative injunctions such as 'at the *atirātra* sacrifice he takes the *ṣoḍaśin* cup' (*atirātre ṣoḍaśinaṃ gṛhṇāti*) and 'at the *atirātra* he does not take the *ṣoḍaśin* cup' (*nātirātre ṣoḍaśinaṃ gṛhṇāti*); 'he sacrifices after the sun has risen' (*udite juhoti*) and 'he sacrifices when the sun has not yet risen' (*anudite juhoti*).[2] All such injunctions pertain to what is *sādhya*. He then continues: 'But there is no option as to whether a thing is thus or thus, is or is not. Option depends on human notions. Knowledge of the nature of a thing does not depend on human notions. It depends only on the thing itself. To say with regard to a pillar "it is a pillar or it is a man or it is something else" does not result from correct knowledge. To say that it is a man or something else does result from false knowledge. To say that it is a pillar results from correct knowledge, because it depends on the thing itself. Therefore the means of knowing objects, that are existent things, depend on the things themselves'.[3]

In a later passage the concept of knowledge (*jñāna*) is dealt with in a slightly different context, where Śaṅkara speaks about meditation (*dhyāna*), a mental

[1] *Brahmasūtrabhāṣya*, 1.1.3. Ed. Nirṇaya Sāgara, Bombay, 1934, 52–3. Śaṅkara always assumes that no two Vedic utterances are contradictories. See e.g. R. de Smet, 'The theological method of Śaṃkara', *Revue Philosophique de Louvain*, LII, 1954, 31–74, and n. 47.

[2] In Mīmāṃsā this is called *ṣoḍaśī-nyāya* 'principle of the *ṣoḍaśin* cup': see, e.g., Garge, op. cit., 265.

[3] *na tu vastv evaṃ naivam asti nāstīti vā vikalpyate / vikalpanās tu puruṣabuddhyapekṣāḥ / na vastuyāthātmyajñānaṃ puruṣabuddhyapekṣam / kiṃ tarhi vastutantram eva tat / nahi sthānāv ekasmin sthānur vā puruṣo'nyo veti tattvajñānaṃ bhavati / tatra puruṣo 'nyo veti mithyājñānam / sthānur eveti tattvajñānaṃ vastutantratvāt / evaṃ bhūtavastuviṣayāṇāṃ prāmāṇyaṃ vastutantram //*

activity which is based upon a special kind of *vidhi*. Knowledge which is expressed in propositions, for which the law of contradiction holds, is not contrasted with injunctions in general, but with meditation. In Advaita *jñāna* acquires the meaning of intellectual knowledge and Śaṅkara thus goes beyond the magical atmosphere of the Brāhmaṇa literature, where an important aspect of *jñāna* can be described as magical identification.[1] In the following passage [2] Śaṅkara has first quoted a *vidhi* which enjoins meditation and then continues: 'If meditation and reflection are mental activities, they can be performed, not performed, or performed differently by man, because they depend on man. But knowledge originates from the means of knowledge, which have as their objects things as they exist. Therefore knowledge cannot be performed, not performed, or performed differently, for it solely depends on the object. It does neither depend on authoritative statements, nor on man'.[3]

These passages show how Advaita constitutes in this respect a return from Mīmāṃsā to the grammatical doctrines.[4] The difference is, that in grammar the law of contradiction is immediately applied to propositions, while in Advaita the law of contradiction is said to hold for propositions because it holds in reality. Śaṅkara's logic is founded on his ontology. This difference partly reflects the different preoccupations of grammarians and philosophers. It shows incidentally that the Advaita position in philosophy is firmly realistic.[5] The linguistic background for both views is that grammarians as well as Advaitins are mainly interested in description and in propositions where the verb occurs in the indicative mood or where the sentence is purely nominal. The Mīmāṃsakas, on the other hand, are interested in prescription and in injunctions where the verb occurs in the optative mood.[6]

[1] See, for instance, H. Oldenberg, *Die Weltanschauung der Brahmana-Texte*, Göttingen, 1919, 110–23.

[2] *Brahmasūtrabhāṣya*, 1.1.4. Ed. Nirṇaya Sāgara, 83; discussed by the present author in *Advaita and neo-Platonism: a critical study in comparative philosophy*, Madras, 1961, 101–2, and cf. 80–1.

[3] *dhyānaṃ cintanaṃ yady api mānasaṃ tathāpi puruṣeṇa kartumakartumanyathā vā kartuṃ śakyaṃ puruṣatantratvāt / jñānaṃ tu pramāṇajanyam / pramāṇaṃ ca yathābhūtavastuviṣayam / ato jñānaṃ kartumakartumanyathā vā kartumaśakyaṃ kevalaṃ vastutantram eva tat / na codanātantram / nāpi puruṣatantram //*

[4] cf. Renou, *JA*, CCXXXIII, 1941–2, 115: 'le style nominal, représenté de façon rigoreuse par les sūtra grammaticaux et que reprendront les sūtra philosophiques, cède la place, dans le rituel, à un style verbal charactérisé par l'indicatif descriptif, l'optatif prescriptif, l'absolutif d'enchaînement temporel . . .'.

[5] This holds on the *vyāvahārika* level. Śaṅkara's explicit statements are somewhat obscured in O. Lacombe, *L'Absolu selon le Védānta*, Paris, 1937, 124.

[6] Brough, who rightly stressed this Mīmāṃsā preoccupation with injunctions, has also drawn attention to the fact that the terms *vidhi* and *pratiṣedha* came to refer to indicative sentences as well: 'although later Indian logic deals largely in indicative sentences, the linguistic thought of philosophers in India was not so strictly confined to indicative propositions as that of logicians in the west. This influence can be traced in the terms *vidhi* and *pratiṣedha*, originally meaning injunction and prohibition, but in later texts occasionally used to apply simply to positive and negative statements' (J. Brough, 'Some Indian theories of meaning', *TPS*, 1953, 162).

The grammarians, accordingly, do not use *vidhi* to denote positive linguistic propositions, but generally employ the term *sūtra* ' rule ' and sometimes, more specifically, *utsarga* ' general rule '. The term used for negative linguistic propositions is, as we have seen, either *pratiṣedha* or *niṣedha*. These terms seem to have similar, but not identical functions to the Mīmāṃsā term for ' prohibition ', reflecting a trend among the grammarians which deviates from their customary stress on description and emphasis on empirically tested usage (*loka*). There are occasions where the grammarians actually prohibit the use of certain words, which may have been colloquial and which are referred to as *apaśabda* ' incorrect word '. In this connexion Patañjali propounds an interesting analysis of the relationship between positive and negative linguistic rules, which reflects the similar relationship between positive and negative ritualistic rules. The text is as follows [1] :

' Now words have to be examined. How is this to be done? Are (correct) words to be taught, or perhaps incorrect words, or perhaps both? Our purpose will be served by the teaching of either. Thus by a restrictive condition (*niyama*) on what food is fit to be eaten is implied a prohibition (*pratiṣedha*) of what food is not fit to be eaten. For example when we say " Five five-toed animals are fit to be eaten " it is implied that (five-toed animals) different from these are not fit to be eaten. Or alternatively, by a prohibition of what is not fit to be eaten is implied a restrictive condition on what is fit to be eaten. For example when we say " the domestic fowl is not fit to be eaten, the domestic pig is not fit to be eaten " it is implied that the wild variety (of these animals) is fit to be eaten. This applies also in the present context. If the correct words are taught, for instance when the word *gauḥ* has been taught, it is implied that *gāvī*, etc., are incorrect words. If on the other hand incorrect words are taught, for instance when the words *gāvī*, etc., have been taught, it is implied that *gauḥ* is the correct word '.[2]

This passage gives interesting rules for *pratiṣedha* negations which are closely related to the law of double negation. If N[F(x)] denotes that F(x) is prescribed by means of a restrictive condition (*niyama*), the ritualistic rule first quoted can be written as :

$$N[F(x)] \longleftrightarrow (\sim N)F(\sim x), \qquad (20)$$

where F(x) denotes : *x bhakṣyam* ' x is fit to be eaten '. The examples which follow correspond to this rule and the grammatical rule can be given in the same form. In all cases Patañjali expresses equivalence by means of biconditionals.

[1] Ed. F. Kielhorn, I, 5 ; cf. ed. and transl. K. C. Chatterji, Calcutta, 1957, 34–5.

[2] *śabdānuśāsanam idānīṃ kartavyam / tat kathaṃ kartavyam / kiṃ śabdopadeśaḥ kartavyaḥ āhosvid apaśabdopadeśaḥ āhosvid ubhayopadeśaḥ iti / anyataropadeśena kṛtaṃ syāt / tad yathā bhakṣyaniyamenābhakṣyapratiṣedho gamyate / pañca pañcanakhā bhakṣyāḥ ity ukte gamyata etad ato'nye'bhakṣyā iti / abhakṣyapratiṣedhena vā bhakṣyaniyamaḥ / tad yathā abhakṣyo grāmyakukkuṭaḥ abhakṣyo grāmyasūkaraḥ ity ukte gamyata etad āraṇyo bhakṣya iti / evam ihāpi / yadi tāvac chabdopadeśaḥ kriyate gaur ity etasminn upadiṣṭe gamyata etad gāvyādayo'paśabda iti / yathāpy apaśabdopadeśaḥ kriyate gāvyādiṣūpadiṣṭeṣu gamyata etad gaur ity eṣa śabda iti //*

That the grammarian concept of *pratiṣedha*, however, is not the same as the Mīmāṃsā concept is shown by Patañjali in another passage, where the law of contradiction is explicitly formulated in the following terms : *vidhipratiṣedhayor yugapad vacanānupapattiḥ* ' it is impossible for a statement to express simultaneously a *vidhi* and a *pratiṣedha* '.[1] This corresponds to :

$$\sim \{N[F(x)] \wedge (\sim N)\ [F(x)]\} \tag{21}$$

and confirms the view that the grammarians, like the Advaitins, deal with indicative sentences, where the law of contradiction holds, while Mīmāṃsakas deal with injunctions, where the law of contradiction need not hold. In grammar, then, *vidhi* means rule or positive statement, and not injunction.

These passages enable us to see what is the precise structure of the negations concerned. If numerous texts of this type could be found and analysed, it would enable us to construct complete lists of formation rules. In the present context our purpose is merely to draw attention to logical possibilities which are different from those generally considered and which show that both Western and Indian concepts of negation are the product of a particular development.

The law of double negation is explicitly given in the *Pradīpa* of Kaiyaṭa, a grammatical commentary of the eleventh century. It is formulated as follows : *pratiṣedhapratiṣedhād vidhir bhavati* ' the prohibition of a prohibition gives an injunction '.[2] This could probably be expressed by :

$$\sim \sim N[F(x)] \rightarrow N[F(x)] \tag{22}$$

since : $(\sim N)\ [(\sim N)\ F(x)]$ is not defined. The Sanskrit dictionary of V. S. Apte quotes a grammatical rule regarding the use of the particle of negation *na* which is also called *niṣedha*. The source is not given. The rule is : *dvau niṣedhau prakṛtārthaṃ gamayataḥ* ' two particles of negation give the meaning of the original '.[3] These formulations of the law of double negation precede by centuries the purely logical laws of double negation propounded in *navya-nyāya* and studied by Ingalls.[4]

We have seen that the grammarian and Advaitin doctrines of negation have a linguistic background in the structure of the indicative mood of the verb, while the Mīmāṃsā doctrine of negation has a linguistic background in the structure of the optative mood of the verb, which is reflected also in the imperative. The grammatical rule about two consecutive negative particles cancelling each other draws our attention to the linguistic background of the law of double negation. It is well known that in Indo-European two negatives can either cancel each other or supplement each other. This is a linguistic

[1] *Mahābhāṣya ad* Pāṇini, 1.1.44, ed. Kielhorn, I, 103 ; cf. V. G. Paranjpe, *Le vārtika de Kātyāyana*, Paris, 1922, 30–1.

[2] Renou, *Terminologie*, 219.

[3] A similar quotation (*dvau nañau prakṛtyarthaṃ gamayataḥ*) is found in P. C. Chakravarti, *The linguistic speculations of the Hindus*, Calcutta, 1933, p. 436, n. 3.

[4] D. H. H. Ingalls, *Materials for the study of Navya-nyāya logic*, Cambridge, Mass., 1951, 68–72 ; cf. J. F. Staal, *Indo-Iranian Journal*, IV, 1, 1960, 70–1.

fact which can be observed in Sanskrit as well as in Greek. It is not very hazardous to assume that the cancelling particles of negation in ordinary language are at the background of the logical law of double negation.

Delbrück called the accumulative use of more than one negative particle ' Ergänzungsnegation ' and gave examples from Sanskrit, Lithuanian, Slavonic, and Greek.[1] Accumulative negation is also often found in modern languages.[2] It seems again likely that this use is at the background of the logical systems which reject the law of double negation, either in Navya-nyāya or in Intuitionism.[3]

The distinction between the negation of terms and the negation of sentences or predicates is also related to certain facts of language. It is well known that in Indo-European there are two forms of negation : sentence negation, expressed by *ne* (*nē*) and *mē*, and word negation, expressed by the so-called privative prefix.[4] Chinese has the analogous distinction between respectively *pu* and *fei*,[5] and A. C. Graham has quoted a passage where a law of contradiction is formulated in terms of the term negation *fei*.[6] Inspection of the Sanskrit passages discussed in the above shows that the sentence negation *na* is used in all cases. There is one case, however, where the privative syllable *a*(*n*)- could have been used. In this case negation of a term was used in the formalization despite the fact that this is not permitted in the customary notation of modern logic. Here, when the ambiguous use of the sentence negation *na* in *nānuyājeṣu* . . . ' not at the after-sacrifices . . .' is explained by *anuyājavyatirikteṣu* ' at sacrifices other than the after-sacrifices ', it would have been possible to explain this merely as *an-anuyājeṣu* ' at the " un "-after-sacrifices '. Though this form is not given in the text, the explanation given there confirms this view : ' because the negative (*nañ*) is combined with the word " after-sacrifices " (*anuyāja*) we have a case of *paryudāsa*. For the negative and the word after-sacrifices together denote what is other than the after-sacrifices '.[7]

Whenever the two negatives remain clearly distinct there is no danger of confusion and logicians can clearly distinguish between negation of terms and of predicates and study the relationships between both. Logical problems arise whenever the sentence negation is used or functions as word negation, and vice versa. In Indo-European both possibilities are realized, though infrequently. In Vedic *nákis* can mean ' nobody ' (' not anybody '), but more often

[1] B. Delbrück, *Vergleichende Syntax der indogermanischen Sprachen*, Strassburg, I–III, 1893–1900, II, 535–6.

[2] See, e.g., O. Jespersen, *The philosophy of grammar*, London, 1948, 331–4.

[3] See Ingalls, loc. cit.

[4] Delbrück, II, 533.

[5] See A. C. Graham, *BSOAS*, XXII, 3, 1959, 567, and *Asia Major*, NS, VII, 1–2, 1959, 88.

[6] *Asia Major*, NS, VII, 1–2, 1959, 91, ' One saying that it is an ox, the other that it is not, is " contesting the other's case ". Their claims will not both fit '. The first negative particle translates the term negation *fei*, the second the sentence negation *pu*. Cf. also J. F. Staal, *TPS*, 1960, 93.

[7] *nañoʼnuyājaśabdena saṃbandham āśritya paryudāsa āśrīyate, nañanuyājaśabdābhyām anuyājavyatiriktalakṣaṇāt* : *Mīmāṃsā-nyāya-prakāśa*, section 349.

it merely means ' not ' or ' never ' and is applicable to the whole sentence.[1] A similar transference of the sentence negative *na* to a term is found in the adverb *naciram* ' not long ', which can be explained as a development from sentences of the type *na ciraṃ vasati* ' he does not stay long '.[2]

The Sanskrit grammarians, on the other hand, mention a case where the privative syllable is attached to a verbal form, which thereby acquires a special meaning. This forms an exception to Pāṇini, 2.2.6, *nañ* ' the negative particle (combines with a noun) ', and is given by the *Kāśikā* when commenting upon this *sūtra*. The form given is : *apacasi* ' you are a bad cook, you cook badly ', from *pacasi* ' you cook '.[3] Pāṇini describes the word negation *a*(*n*)- as derived from the sentence negation *na* which loses its initial *n*.[4] While this is for Pāṇini a matter of descriptive grammar, it also holds historically.[5]

Aristotle in the sentences discussed earlier uses the Greek sentence negations μή and οὐκ (for Indo-European *ne*)[6] also for the negation of terms and nouns. Not only τὸ μὴ εἶναι λευκόν, but also τὸ εἶναι μὴ λευκόν, and not only τὸ οὐ βαδίζει ἄνθρωπος, but also τὸ οὐκ ἄνθρωπος βαδίζει. It is not surprising, therefore, that Bocheński finds that Aristotle ' struggled hard with the initial confusion of the negation of a sentence with the negation of its terms '.[7] The Indian thinkers were used to the grammarian's distinctions and do not seem to have been similarly confused, as the Mīmāṃsā doctrines quoted above show. In addition Indian philosophers have always been used to dealing skilfully with negations. On the one hand a rich and ramified negative theology developed round the use of the sentence negative in passages such as the *mahāvākya* (' great statement ') *neti neti* ' not thus, not so '.[8] On the other hand the negative prefix is used in many cases where Western thought seems inclined to employ a positive terminology.[9]

In Indian logic, lastly, extensive use is made of the prefix *vi*- which further specifies the function of the privative syllable *a*(*n*)-. The Buddhist logicians called *sapakṣa* any locus where the *hetu* ' reason ' occurs. A locus where the *hetu* does not occur is called *asapakṣa*, later *vipakṣa*. Dharmakīrti (seventh century A.D.) formulates the relationship between these two terms by means of the quantifier *eva* ' only '. In his formulation ' occurrence of the reason in *sapakṣa* only ' (*sapakṣa eva sattvam*) is equivalent to ' non-occurrence in *asapakṣa* of the reason only ' (*asapakṣe cāsattvam eva*).[10] This leads to the discovery of the law of contraposition and to further developments.[11]

[1] Delbrück, II, 524.
[2] Delbrück, II, 534.
[3] *Kāśikā* to Pāṇini, 2.2.6, and 6.3.73.
[4] Pāṇini, 6.3.73.
[5] Delbrück, II, 529–33.
[6] Delbrück, II, 533.
[7] Bocheński, *Ancient formal logic*, 38.
[8] *Bṛhadāraṇyakopaniṣat*, 2.3.6, 3.9.26, 4.2.4, 4.23, 5.15.
[9] See, e.g., J. Gonda, *Four studies in the language of the Veda*, 's-Gravenhage, 1959, 95–117 (' Why are *ahiṃsā* and similar concepts often expressed in a negative form ? ') ; H. Nakamura, *The ways of thinking of Eastern peoples*, Tokyo, 1960, 23–32.
[10] *Nyāyabindu*, ed. T. I. Stcherbatskoy (Bibliotheca Buddhica, VII), Petrograd, 1918, 19 ; ed. Candraśekhara Śāstrī, Banaras, 1954, 23.
[11] See J. F. Staal, ' Contraposition in Indian logic ', to be published in *Proceedings* of the 1960 International Congress for Logic, Methodology and Philosophy of Science, Stanford, Calif.

The Indian logicians are mainly interested in contradiction in connexion with the doctrine of inference. Instead of the term *vipratiṣedha* or related terms, use is made of the terms *viruddha* and *virodhī*, which we have seen used as general terms applied to cases of opposition in grammar as well as in Mīmāṃsā. In the *Nyāya-sūtra* (? second century A.D.) a *hetu* 'reason' is called *viruddha* 'opposed', when it opposes a conclusion (*siddhānta*) which has been established.[1] Later, *viruddha* occurs among the fallacious reasons (*hetvābhāsa*) and a *hetu* is called *viruddha* if it is the opposite of the *sādhya* 'what is to be proved'. For example, the inference *śabdo nityaḥ kṛtakatvāt* 'sound is eternal because it is created' is invalid, for creation and eternity are each other's opposite.[2]

In Indian logic the law of contradiction is widely utilized, explicitly as well as implicitly. One of the most explicit formulations is due to Udayana (tenth century A.D.) and is quoted by D. M. Datta.[3] It runs as follows: *paraspara-virodhe na prakārāntarasthitiḥ* 'when two are mutually opposed there is no occurrence (of both) within the same class'.[4] Implicitly the principle of contradiction is presupposed in most of the logical discussions of *Navya-nyāya*. It becomes explicit when it is attempted to give a detailed formalization of logical arguments.[5]

The doctrines which have been discussed in this paper belong to numerous systems of thought and it would require much more space to study them fully within their own contexts. However, from the general logical viewpoint adopted here, the various interconnexions between the Indian systems on the one hand, and Aristotle on the other hand, have been more apparent than their divergent backgrounds. We have seen that in India, the law of contradiction is formulated and strictly adhered to in grammar, in Advaita Vedānta, and in logic. In Mīmāṃsā the law of contradiction is discarded.[6] The reason

[1] *Nyāya-sūtra*, 1.2.6.

[2] See, e.g., *Tarka-saṃgraha*, 54, ed. Y. V. Athalye, Poona, 1930, 45–6, 302.

[3] D. M. Datta, 'Epistemological methods in Indian philosophy', in C. A. Moore (ed.), *Essays in East–West philosophy*, Honolulu, 1951, 73–88.

[4] Udayana, *Nyāya-kusumāñjali*, 3.8, ibid., p. 88, n. 17.

[5] See, e.g., J. F. Staal, 'Correlations between language and logic in Indian thought'. *BSOAS*, XXIII, 1, 1960, especially 116–17.

[6] Since only the doctrines mentioned are dealt with in this paper, these conclusions do not imply that there are not also other systems where the law of contradiction is denied. Such systems exist in Buddhism (see, e.g., p. 52, n. 4, above, and A. Kunst, 'The concept of the principle of excluded middle in Buddhism', *Rocznik Orientalistyczny*, XXI, 1957, 141–7) and in Jainism (especially in the opportunist *syādvāda* 'let-it-be doctrine'). In Hinduism such thought appears in particular in the Advaita doctrine of the indeterminability (*anirvacanīyatva*) of the world-illusion, which is specified as *sadasadbhyām anirvacanīya* 'indeterminable either as real or as unreal' (similarly: *sadasadbhyām vilakṣaṇa*). If this is interpreted as $\sim (a \vee \sim a)$, it violates the law of contradiction. In Advaita the world-illusion is therefore *sarvanyāyavirodhinī* 'opposed to all logic' (*Naiṣkarmyasiddhi*, 3.66). These doctrines have been vehemently criticized in the name of logic and the law of contradiction both by Viśiṣṭādvaitins (see, e.g., S. N. Dasgupta, *A history of Indian philosophy*, III, Cambridge, 1952, 177), and by Dvaitins (see, e.g., Dasgupta, IV, Cambridge, 1955, 204; A. B. Shastri, *Studies in post-Śaṁkara dialectics*, Calcutta, 1936, 180, 195–6). The law of

for this is not a mystical tendency, which rejects or merely neglects all intellectual distinctions, but a consistent unfolding of the implications inherent in a particular kind of negation. The law of contradiction is then seen to be dependent on the kind of negation which is used in its formulation. Directing our attention to the different types of underlying negations, we have seen that these can be related to various negations used in ordinary language. These negations occur in Sanskrit as well as in Greek and in other Indo-European languages. The principal distinction is that between the negation of nouns and the negation of verbs, a distinction which also obtains in Chinese and probably in numerous other language types. In as far as syntax, logic, and philosophy are mainly interested in propositions or sentences, the negation of the verb, which generally constitutes the negation of the sentence itself,[1] is the most important negation in the present context. However, the verb possesses several moods and negative particles do not function in the same way in each of these. In particular, the negative particle is combined with the indicative (and therefore also with purely nominal sentences, which mostly have an indicative character [2]) in such a manner, that sentences with and without the negative particle exclude each other. This leads to the law of contradiction formulated in terms of indicative sentences. When the particle of negation is used with other moods, however, in particular with the optative or the imperative, sentences with and without negation do not function in this exclusive fashion. For such sentences, therefore, the law of contradiction need not hold. This is fully recognized in Mīmāṃsā, a system of thought which is mainly interested in injunctions generally formulated with the help of the optative mood of the verb.

We may now return to our point of departure. Aristotle's defence of the law of contradiction reflects the emphasis he lays upon indicative sentences. That Western logic has found it useful to develop further along similar lines is not surprising, for indicative sentences are those which are used in all descriptive systems, in particular in science. However, if the logical structure of prescriptive

the excluded middle on the other hand seems to be accepted by the Advaitin Toṭaka who maintained that there exists no intermediary between *sat* ' being ' and *asat* ' non-being ' (see P. Hacker, *Untersuchungen über Texte des frühen Advaitavāda*, Mainz, 1950, 163). Whereas we have seen that Śaṅkara himself uses and accepts the law of contradiction, he can also be seen to argue in accordance with the law of double negation. An example occurs in *Brahmasūtrabhāṣya*, 4.1.3, where the conclusion, that the worshipper is not different from the deity, is drawn from a scriptural statement which opposes the negation of this view, i.e. ' Now if someone worships a deity as other, saying " the deity is one and I am another ", he does not know ' (*Bṛhadāraṇyakopaniṣat*, 1.4.10). Elsewhere Śaṅkara appears to refer implicitly to the law of contradiction when saying that different Vedānta texts cannot teach different cognitions of Brahman, for it is certain that, if at all they differ, ' only one of them is the right one, the others are erroneous ' (*teṣām ekam abhrāntaṃ bhrāntānītarāṇī : Brahmasūtrabhāṣya*, 3.3.1 ; see J. F. Staal in *Atti del XII Congresso Internazionale di Filosofia*, 1958, x, Firenze, 1960, 227).

[1] cf. the article quoted above, p. 57, n. 3.

[2] It has been pointed out, however, that purely nominal sentences of the type *Pax vobiscum !* have an optative character.

sentences had been studied in greater detail (a study which Aristotle had undertaken from a particular point of view in his modal logic), Western logic might have arrived at different doctrines of negation and contradiction in addition to the traditional Aristotelian doctrines. This was done in India in Mīmāṃsā and in the legal literature of *dharmaśāstra*, and to a limited extent in grammar. A similar development in Western logic could have been equally useful in Western prescriptive sciences, for instance in law, in ethics, and, to a limited extent and from a particular point of view, in grammar.[1] The fact that this has not been done may account for the characteristically Western situation, where the sciences have evolved a logical structure which is far superior to the logical structure of, e.g., law or ethics. In India, on the other hand, Mīmāṃsā possesses in principle as scientific a structure as grammar or logic have. It could be said that in the West in general there is an over-emphasis on indicative sentences, which is similar to the often-stressed over-emphasis on the subject-predicate structure. In fact, the latter is mainly available within the framework of the former.

There is no need to explain the law of contradiction in Indian thought as the result of a possible Western influence. On the contrary, it reflects a use of negation which can be found in all Indo-European languages, and probably in many other languages. The last problem which may therefore be raised in this connexion is the Wittgensteinian problem of the relation between language and logic or between language and thought in general. Does the material discussed in the present paper give support, or provide counter-examples, to the thesis that thought depends on language?

In its original form this thesis, either in the manner in which it was analysed by Wittgenstein, or in the manner in which it was suggested by Whorf and by other linguists,[2] is almost certainly unverifiable. In addition Wittgenstein's own method, confined as it was to German and to English, could never attain a satisfactory degree of universality. It has therefore rightly been suggested that the thesis could be tested by the empirical study of linguistic material from divergent sources.[3] The present study, which was partly undertaken in a similar spirit, may show that we are only at the beginning of possibly extensive investigations into the relationships of particular logical, philosophical, and grammatical doctrines with particular linguistic structures of the languages in which they are expressed. These investigations may be particularly illuminating when comparative studies are made of the linguistic structure of

[1] Though modern linguistics aims at being descriptive and not prescriptive, it is possible to formulate general rules *prescribing* how to arrive at a set of rules which together constitute a *description* of a language. This is for example done by Chomsky when he gives transformation rules in the form : ' rewrite X as Y ', i.e. in the form of an injunction (e.g. N. Chomsky, *Syntactic structures*, 's-Gravenhage, 1957, 26 sq.).

[2] See, e.g., B. L. Whorf, *Language, thought and reality*, New York, 1956 ; H. Hoijer (ed.), *Language in culture*, Chicago, 1954.

[3] See A. H. Basson and D. J. O'Connor, ' Language and philosophy : some suggestions for an empirical approach '; *Philosophy*, XXII, 1947, 49–65.

a language, in which relatively highly developed logical, philosophical, and grammatical doctrines are available. This requirement is obviously fulfilled in the case of Sanskrit and Indian thought, and it may to a smaller extent be fulfilled with respect to Chinese.

From this point of view the provisory results of the present paper can perhaps be formulated as follows. It could be shown, perhaps somewhat unexpectedly, that neither the linguistic structure of Sanskrit, nor that of Greek, leads to a particular logical structure. In a detailed investigation it makes no sense to speak of *the* structure of a language. It has been seen, however, that certain structures of language, which are available in Sanskrit, in Greek, and in other languages, are related to particular logical doctrines. The problem then becomes, to see which particular linguistic structure is related to which particular logical doctrine. In the present study some examples of such relationships have been given. On the basis of similar investigations it may be possible to reach more general conclusions.

Does this finally imply that logic or thought in general can be derived from language? The answer must, for the time being, remain uncertain, but we have no good reason as yet to believe that it might turn out to be in the affirmative. For language itself, in order to function, has to obey certain rules, some of which may be made explicit as syntactical rules. Such rules may also be reflected in logical rules and in rules of thought. But while logical rules cannot be reached and formulated without a linguistic background and without a linguistic framework, no language can function without a logical structure which is implicit in it.[1]

[1] I am grateful to Dr. D. L. Friedman who read this paper and made valuable observations.

BRENDAN S. GILLON AND MARTHA LILE LOVE*

INDIAN LOGIC REVISITED: *NYĀYAPRAVEŚA* REVIEWED

* An essay on the *Nyāyapraveśa* was written by me at the University of Toronto during the winter of 1977–1978. Later, when Martha Lile Love and I were engaged in research at Poona University, we developed a framework in which to put the results of our work. To assess the viability of our framework, we searched for a suitable text with which we had some competence. The *Nyāyapraveśa* turned out to be such a text. What began as the revision of my essay became the creation of a new essay. Tragically, before we could complete our final draft, Martha died. Belatedly, I have put the final touches on our manuscript.

INTRODUCTION

Indian logic is no better understood now by the modern mind than it was two thousand years ago when it first was taking shape. Today, those who contribute to the growing literature about Indian logic either recapitulate perfunctorily what is said by those who still engage in it, or interpret it gratuitously through concepts commandeered from mathematical logic. A new approach is desperately needed, if we are not to drown in a morass of erudite mathematical symbols and arcane Sanskrit texts.

In this essay, we hope to exhibit a new approach to Indian logic and to provide a rudimentary exposition of it. To do these two things, we have selected for exposition an elementary text taken from one tradition in the literature of Indian logic, the preponderance of which literature was produced by the adherents of Buddhism, Jainism, and Nyāya-vaiśeṣika. The text which we have selected, the *Nyāyapraveśa*, is a synopsis of Buddhist thinking on logic.

To clarify the approach we have taken in the body of our essay, let us propound the following analogy. A native speaker of a language, as many linguists now assume as an heuristic principle, can enumerate as acceptable an arbitrarily long list of grammatical sentences from his language and as unacceptable another arbitrarily long list of ungrammatical sentences from his language. However, his competence in his language does not, by itself, guarantee that he can articulate the structure which grammatical sentences of his language have and which ungrammatical ones do not. A linguist who is

not a native speaker of this language may try to articulate this structure. Availing himself of his training as a linguist and perusing lists of acceptable and unacceptable sentences of the language as set out by the native speaker, the linguist will articulate, hopefully, what the structure is. If he is successful, he not only will accurately discriminate acceptable from unacceptable sentences enumerated on the lists but also will correctly discriminate as acceptable or unacceptable every subsequent sentence added to the lists by a native speaker. Yet the linguist always runs the risk that a native speaker might add to his list of acceptable sentences a sentence which the linguist's articulation of the language's structure excludes as ungrammatical, or conversely, a native speaker might add to his list of unacceptable sentences a sentence which the linguist's articulation excludes as acceptable.

Now, as we see it, the subject-matter of the *Nyāyapraveśa* is, roughly, argumentation. Argumentation, as circumscribed in this text, has a structure. The author, Śankarasvāmin, sometimes illustrates and sometimes tries to describe this structure. In illustrating it, the author provides us with specimens of instances of proper argumentation (acknowledged as such) and of improper argumentation (also acknowledge as such); just as in listing acceptable sentences as acceptable and unacceptable ones as unacceptable, the native speaker provides the linguist with specimens which exhibit the structure of the language and with specimens which do not. In trying to describe it, the author tries to state what the structure of argumentation is; just as in articulating the structure of a language by which acceptable sentences can be discriminated from unacceptable ones, the linguist tries to provide a grammar of the language.[1] So our task is two-fold: first, to ferret out the structure and then, to ascertain the degree to which Śankarasvāmin has managed to correctly articulate this structure. As a result, this essay falls into three parts: in the first part, we set out the structure; in the second part, we discuss those sections of the *Nyāyapraveśa* which are unclear; and in the last part, we assess Śankarasvāmin's grasp of the structure of the subject-matter to which he has addressed himself.

In writing this essay, we intend our audience to include Sanskritists and non-Sanskritists alike: we aim this essay both at those who have an interest specifically in the *Nyāyapraveśa* and at those who want to acquire merely a general but representative acquaintance with Indian logic. Thus, for the latter kind of reader, we propound, in the first and third parts of our essay, the scope of the structure with which Śankarasvāmin is trying to come to grips

and his understanding of it respectively. We maintain, by the way, though we do not substantiate it here, that this structure is the one which underlies Indian logic, at least as it is expounded in the texts of Buddhism and Nyāya-vaiśeṣika. For the former kind of reader, we discuss, in the second part of our essay, those passage of the text either which might seem problematic vis-à-vis our claims in the previous part or which shed light on how Śankarasvāmin understood the structure set out in the previous part. In all these parts, we inevitably resort to some concepts drawn from modern logic. However, logical notation and cant are not used unless they are part of a reformulation of a point already made in plain English; and where they are used, references are made to an appropriate books written to introduce the general reader to the topic.

Documentation for the structure we assert is ensconced in the *Nyāya-praveśa* and documentation for its understanding by Śankarasvāmin is provided at the appropriate places in the essay by notes. In these notes, we furnish references both to an English translation[2] (for those who do not read Sanskrit) and to a Sanskrit edition[3] (for those who do). These references are made through a table which we have organized as follows. First, we have divided the work exhaustively into disjoint passages. Secondly, we have labelled these passages with a decimal notation à la Wittgenstein. This labelling shows clearly how the various passages are related to one another. Furthermore, the table shows which passages are adduced as evidence in the first part of the essay, which are discussed in the second, and which are without import to the task at hand – these last passages are those which organize the work but which do not add any content to it. The Table forms an Appendix to this article.

I

There are four levels of structure underlying the subject-matter of the *Nyāya-praveśa*. Only for one of them is there a convenient and familiar word; so for the other three we have dredged up two obscure ones and a not-so-obscure but perhaps awkward one. The first level of structure we call "the ontic level." This is the structure embodied in the world of the work.[4] The second level we call by a more familiar term, "the epistemic level." As one might very well guess, it pertains to the structure which is embodied in knowledge of the world by its observers. "The dialectic level" is what we call the third

level. This structure defines the limits within which one observer of the world can elicit a belief from another observer of the world.[5] The final level we dub "the forensic level," for the structure here is the rules of a game in which two observers of the world may engage.[6] Since the forensic level presupposes the dialectic level, the dialectic the epistemic, and the epistemic the ontic, we shall begin our exposition with the last and end with the first.

Ontic Level

The world consists of objects and relations. There are two kinds of object, substratum (dharmin) and superstratum (dharma).[7] A superstratum bears at least one relation to a substratum. This relation is not named in the *Nyayāpraveśa*, but it comes to be known in another later tradition of Indian thought, namely Navya-nyāya, as occurrence (vṛtti). This relation obtains if and only if a superstratum is in or on the substratum. In the later tradition just mentioned, this relation of occurrence acquires many forms, the most common of which are contact (saṃyoga) and inherence (samavāya). To see how this relation is applied, suppose that the world includes such objects as pots and tables and that a pot is on a table, then the pot is said to occur on the table. Here the relation of occurrence is one of contact, for the pot occurs on the table by contact. Again, suppose that the world includes such objects as redness (i.e., the color red) and pots and that a pot is red, then redness occurs in the pot. Here the relation is one of inherence, for redness occurs in the pot by inherence. The converse of the relation of occurrence is the relation of possession. A substratum possesses a superstratum if and only if the superstratum occurs in or on the substratum. Thus, for example, if fire is on a mountain, then the mountain possesses fire; and conversely, if a mountain possesses fire, then fire is on the mountain.[8] Another relation is the relation which a superstratum bears to another superstratum. This relation can be defined in terms of the occurrence-relation. Later, this relation comes to be know as pervasion (vyāpti), but here it is known by its converse, concomitance (anvaya). One superstratum is concomitant with another if and only if in whatever substratum the former occurs the latter occurs. This relation is both reflexive and transitive. That is to say, every superstratum is concomitant with itself; and, if a superstratum is concomitant with another, and the other with a third, then the first is concomitant with the third.

As a result of these relations, the world embodies a structure: If one

superstratum, designated by H (hetu-dharma), is concomitant with another superstratum S (sādhya-dharma),[9] and if the former superstratum occurs in a substratum, designated by "p" (pakṣa),[10] then superstratum S occurs in substratum p. This structure[11] can be expressed by the following deduction-schema:

Major Premiss:	Whatever has H has S.
Minor Premiss:	p has H.
Conclusion:	p has S.

For those familiar with symbolic notation, we can express the same schema in the following way:

Major Premiss:	$(\forall x)(Hx \rightarrow Sx)$
Minor Premiss:	Hp
Conclusion:	Sp

What the deduction-schema provides is a warrant, as it were, that whenever the premisses fit the facts the conclusion is a fact, that is, whenever the premisses are true the conclusion is true.[12] Thus, for example, let us assume that these two claims are factual: whatever has smoke has fire and Mount McKinley has smoke. Then, by virtue of the deduction-schema, it is a fact that Mount McKinley has fire. However, if even one of the premisses is false, the premisses no longer warrant the truth of the conclusion. We should be on our guard not to confuse the notion that the premisses warrant the falsity of the conclusion with the notion that the premisses no longer warrant the truth of the conclusion. When one, or even all, of the premisses of a deduction is false, it is the latter concept which applies, and not the former.

Epistemic Level

Imagine that the world which we have just described has an observer. The observer has a set of beliefs. An observer is said to accept a belief if and only if the belief is a member of the set of beliefs which the observer has. Thus, if an observer has as a set of beliefs that the mountain has fire, that a monkey is in a tree, and that whatever has smoke has fire; then the observer accepts that the mountain has fire, that a monkey is in a tree, and that whatever has smoke has fire.

Beliefs about this world are of two kinds: beliefs about which superstrata are concomitant with which superstrata, and beliefs about which superstrata are in which substrata. Beliefs of the first kind can be expressed in the form "Whatever has superstratum A has superstratum B", or more easily as "Whatever has *A* and *B*", or symbolically as "$(\forall x)(Ax \rightarrow Bx)$". The third belief in the set of beliefs given above as examples has this form. Beliefs of the second kind can be expressed in the form "Substratum *a* has superstratum *C*", or more succinctly as "*a* has *C*", or symbolically as "*Ca*". The first and second beliefs in the example-set above illustrate this form.

Also, if an observer accepts a belief, then he necessarily accepts that the superstrata of the belief exist, if it is a belief of the first kind, or, he necessarily accepts that both the superstratum and the substratum of the belief exist, if it is a belief of the second kind. So, if an observer accepts that whatever has smoke has fire, then he accepts that smoke exists and that fire exists. Similarly, if an observer accepts that a tree has a monkey, then he accepts that the tree exists and that the monkey exists.

An observer may augment the number of beliefs in the set of his beliefs in two ways, by perception (pratyakṣa) and by inference (anumāna).[13] In the first way, if an observer perceives that a substratum, say *a*, has a superstratum, say *C*, then he adds a belief to that effect to his set of beliefs. That is, if an observer perceives that *Ca*, then he accepts that *Ca*. So, an observer accepts that the mountain has smoke when he perceives that the mountain has smoke. In the second way, an observer adds to his set of beliefs a belief wherein what is believed fits the form of the conclusion of the deduction-schema, if an observer picks from his set of beliefs two beliefs wherein what is believed fits the form of the two premisses of the deduction-schema. In other words, if an observer accepts two beliefs which can be expressed in the form of the premisses of the deduction-schema, then he accepts the belief which is expressed in the form of the conclusion of the schema. It follows, then, that the acceptability of the conclusion of an inference depends not only on the logical deducibility of the conclusion from the premisses but also on the acceptability of the premisses.

Dialectic Level

An observer may augment the number of beliefs which another observer has in only one way, namely, by argument (sādhana).[14] An observer augments the number of beliefs another observer has if and only if the former compels

the latter to add to his set of beliefs a belief which was previously not a member of his set of beliefs;[15] that is to say, the former causes the latter to accept a belief which the latter did not previously accept; or, to put it still another way, the former convinces (pratyāyati) the latter of a belief.[16]

For one observer to convince another of a belief, the former must meet four requirements. First, he must find a belief wherein what is believed can be expressed in the form "Superstratum *H* is in substratum *p*". Secondly, he must find two beliefs wherein what is believed can be expressed in the form "Wherever superstratum *H* is superstratum *S* is" and "Wherever superstratum *S* is not superstratum *H* is not". Thirdly, for each of these last two beliefs, he must name a substratum (other than the one designated in the argument being made) which satisfies the universal statement expressing each belief.[17] We may summarize these first three requirements by the following argument-schema:[18]

Major Premiss 1:	Whatever has not *S* has not *H*.
Example 1:	For example, *q*.
Major Premiss 2:	Whatever has *H* has *S*.
Example 2:	For example, *r*.
Minor Premiss :	*p* has *H*.
Conclusion:	*p* has *S*.

(where "*q*" names any substratum other than the one named by "*p*" which has neither superstratum *H* nor superstratum *S*; and where "*r*" names any substratum other than the one named by "*p*" which has both superstratum *H* and superstratum *S*.)

This can be re-expressed symbolically as:

Major Premiss 1:	$(\forall x)(\sim Sx \rightarrow \sim Hx)$.
Example 1:	For example, *q*.
Major Premiss 2:	$(\forall x)(Hx \rightarrow Sx)$.
Example 2:	For example, *r*.
Minor Premiss :	Hp.
Conclusion:	Sp.

(where $q \neq p \wedge \sim Hq \wedge \sim Sq$; and where $r \neq p \wedge Hr \wedge Sr$.)

Lastly, it is required that the beliefs and examples which are stated in the

argument be established (prasiddha) (siddha) ones. To be established (for an argument) (between two observers) means to be accepted by both observers (at the time of the argument).[19]

Let us note the two major premisses are logically equivalent. That is to say, whenever one is true, the other is true, and whenever one is false, the other is false. Let us also note that if an observer argues correctly for a belief, he *a fortiori* accepts that belief, for in carrying out an argument he carries out an inference (though in carrying out an inference he does not necessarily carry out an argument). Therefore, the convinceability, as it were, of an argument depends on the acceptability of its ensconced inference, which, in turn, depends on the validity of its ensconced deduction. That is, if the deduction is not valid, then the inference is not acceptable; and if the inference is not acceptable, then the argument is not convincing.

Forensic Level[20]

To be eligible to play the game, one must be an observer of the world as described above. Moreover, it is agreed that, during the game, any belief acquired by one player as a result of genuine perception is acquired by the other players also as a result of genuine perception. Thus, if one player genuinely perceives smoke on a mountain, then the other player also will genuinely perceive smoke on that mountain.[21]

Now the game is played in rounds and each round of the game consists in two turns. The player to take the first turn of a round is the proponent in that round; and the player to take the second turn of a round is the opponent in that round. In the first turn, the proponent has an opportunity to compel acceptance of a belief from his opponent. In the second turn, the opponent has an opportunity to demur to the belief argued for by the proponent. Since the only means whereby one observer may augment the number of beliefs which another observer accepts is argument, the first turn of a round comprises the proponent making an argument (Cf. fn. 16), and the second turn of that round comprises the opponent finding fault with that argument.[22] For any given round, the opponent is compelled to accept the belief argued for by the proponent if and only if the opponent does not find an actual fault with the argument of the proponent.

The player to be the proponent in the next round is the opponent of the current round if and only if the opponent of the current round successfully finds fault with the argument advanced by the proponent of the current

round. (Obviously this leaves open the question as to which player is the proponent and which the opponent in the first round.) The game ends when there is a winner. A player becomes a winner when and only when, at the end of some round, he has compelled the other player to accept explicitly inconsistent beliefs while he himself has eschewed accepting explicitly inconsistent beliefs.[23] (It is possible that the beliefs shared by the two players are not sufficient to permit either player to force the other's set of beliefs to be explicitly inconsistent.)

II

We have now seen the structure underlying the subject-matter of the *Nyāya-praveśa*. However, in adducing evidence to support our analysis, we have ignored many passages, most of which are those in which Śankarasvāmin attempts to describe this same structure. To discuss these passages in detail will serve both to clinch our claims concerning what the structure of argumentation here is and to elucidate how Śankarasvāmin conceives it.

Before beginning this discussion, let us first adopt an emendation. This emendation does not affect what we are about to say, but it does throw into greater relief some of the points we make below. We suggest that Sections Ø.2226 and Ø.2231 be emended as follows: all of each passage, except for the terms by which they are named, "Viruddha-avyabhicārin" (i.e., "That which is invariably concomitant with the excluded ones") and "Dharma-svarūpa-viparīta-sādhana" ("That which establishes the opposite of the superstratum itself"), should be exchanged. We support this emendation on two grounds. First, it renders the supersection Ø.222 a coherent whole insofar as the supersection (under the emendation) corresponds exactly to Dignāga's *Hetu-cakra-nirṇaya*.[24] Secondly, it yields a better fit between the meaning of the terms and what the terms name; this is especially true of section Ø.2226.

A.

The first section deserving our attention is Ø.223.[25] Here Śankarasvāmin discusses and illustrates four cases of objectionable arguments (sādhana). However, the basis for their being considered objectionable is not obvious. Below we try to make the basis clear.

The first case involves a pair of arguments. As usual, Śankarasvāmin has stated these arguments only in abbreviated form. Let us see them in their unabridged form.[26]

Argument 1:	Major Premiss 1 *S*:	Yat nityam tat a-kṛtakam
	Example 1 *S*:	ākāśa-vat
	Major Premiss 2 *S*:	Yat kṛtakam tat a-nityam
	Example 2 *S*:	ghaṭa-vat
	Minor Premiss *S*:	kṛtakaḥ śabdaḥ
	Conclusion *S*:	a-nityaḥ śabdaḥ
	Major Premiss 1 *E*:	Whatever is eternal is non-produced
	Example 1 *E*:	like sky
	Major Premiss 2 *E*:	Whatever is produced is non-eternal
	Example 2 *E*:	like pot
	Minor Premiss *E*:	Sound is produced
	Conclusion *E*:	Sound is non-eternal.

Argument 2:	Major Premiss 1 *S*:	Yat a-nityam tat a-śrāvaṇam
	Example 1 *S*:	
	Major Premiss 2 *S*:	Yat śrāvaṇam tat nityam
	Example 2 *S*:	śabda-tva-vat
	Minor Premiss *S*:	śrāvaṇaḥ śabdaḥ
	Conclusion *S*:	nityaḥ śabdaḥ
	Major Premiss 1 *E*:	Whatever is non-eternal is inaudible
	Example 1 *E*:	
	Major Premiss 2 *E*:	Whatever is audible is eternal
	Example 2 *E*:	For example, sound-ness
	Minor Premiss *E*:	Sound is audible
	Conclusion *E*:	Sound is eternal

The fact that we are given a pair of arguments sugests that what is wrong with these arguments does not lie in either taken by itself but in both taken together. This suggestion is confirmed when we also recall that Argument 1 is cited by Śankarasvāmin as a paradigm of an inference satisfying the criteria of trirūpa (a notion to be discussed below, pp. 364 ff). What is objectionable is precisely what is not stated. Argument 1 is an argument usually attributed to adherents of Buddhist doctrine; Argument 2 is an argument which is usually attributed to adherents of Vaiśeṣika doctrine.[27] Since Buddhists do not accept that sound-ness (śabda-tva) exists, the second example in Argument 2 fails to convince them; and conversely, since adherents of Vaiśeṣika doctrine do accept that sound is eternal (śabdaḥ nityaḥ), the major premisses of Argument 1 fail to convince them. Thus Śankarasvāmin says:[28]

Ubhayoḥ saṃśaya-hetu-tvāt dvau api etau anaikāntikaḥ samuditau eva

These two arguments are inconclusive only when taken together, since the pair is grounds for doubt [i.e., being unconvinced].

The second case in this section is more straightforward. The argument, as Tachikawa points out,[29] is one put forth by the adherents of Sāṃkhya doctrine, in which the soul (ātman) is held to be simple. If we assume that this is what the argument is intended to establish, then it fails to do so. The conclusion that the eyes etc. are for the use of another thing is not incompatible with either the belief that the other object is simple or the belief that the other thing is complex. And so, Śankarasvāmin observes:[30]

Ayam hetuḥ yathā pārārthyam cakṣuṣa-ādīnām sādhayati tathā samhatatvam api parasya ātmanaḥ sādhayati ubhayatra avyābhicārāt.

To the extent that the grounds establish the eyes, and so forth, to be for the sake of what is other [than the eyes, and so forth], to that extent [they] establish what is other [than the eyes, and so forth], the soul, to be complex; for [the grounds] do not deviate from [i.e., permit] both [conclusions, i.e., that the soul is simple and that the soul is complex].

The last two cases of this section rely on just one example, but that example is the conflation of three arguments. For the sake of clarity, let us spell them out.

Argument 1:	Major Premiss 1 *S*:	Yat dravyam tat an-eka-dravye
	Example 1 *S*:	
	Major Premiss 2 *S*:	Yat-eka-dravye tat na dravyam
	Example 2 *S*:	Sāmānya-viśeṣa-vat
	Minor Premiss *S*:	Bhāvaḥ eka-dravye
	Conclusion *S*:	Bhāvaḥ na dravyam.
	Major Premiss 1 *E*:	Whatever is a substance does not exist in just one substance
	Example 1 *E*:	
	Major Premiss 2 *E*:	Whatever exists in just one substance is not a substance
	Example 2 *E*:	For example, lower universals
	Minor Premiss *E*:	Existence exists in just one substance
	Conclusion *E*:	Existence is not a substance.
Argument 2:	Major Premiss 1 *S*:	Yaḥ guṇaḥ saḥ na guṇeṣu
	Example 1 *S*:	
	Major Premiss 2 *S*:	Yaḥ guṇeṣu saḥ na guṇaḥ
	Example 2 *S*:	Sāmānya-viśeṣa-vat
	Minor Premiss *S*:	Bhāvaḥ guṇeṣu
	Conclusion *S*:	Bhāvaḥ na guṇaḥ.
	Major Premiss 1 *E*:	Whatever is a quality does not exist in qualities
	Example 1 *E*:	
	Major Premiss 2 *E*:	Whatever exists in qualities is not a quality
	Example 2 *E*:	For example, lower universals
	Minor Premiss *E*:	Existence exists in qualities
	Conclusion *E*:	Existence is not a quality.

Argument 3:	Major Premiss 1 *S*:	Yat karma tat na karmasu
	Example 1 *S*:	
	Major Premiss 2 *S*:	Yat karmasu tat na karma
	Example 2 *S*:	Sāmānya-viśeṣa-vat
	Minor Premiss *S*:	Bhāvaḥ karmasu
	Conclusion *S*:	Bhāvaḥ na karma
	Major Premiss 1 *E*:	Whatever is an action does not exist in actions
	Example 1 *E*:	
	Major Premiss 2 *E*:	Whatever exists in actions is not an action
	Example 2 *E*:	For example, lower universals
	Minor Premiss *E*:	Existence exists in actions
	Conclusion *E*:	Existence is not an action.

The problem with these three arguments is that they do not force one to conclude what the proponent of these arguments hopes one to conclude – namely, that existence (bhāva) belongs to a category other than substance (dravya), quality (guṇa), or action (karma) – even if one accepts all three arguments. The reason is this: if one were to add the premiss that there are just three categories – namely, substance (dravya), quality (guna), and action (karma) – to the conclusions already reached, then one concludes that existence does not exist. Consequently, Śankarasvāmin observes this about the amalgamation of arguments:

Ayam hetuḥ yathā dravya-ādi-pratiṣedham bhāvasya sādhayati tathā bhāvasya abhāvatvam api sādhayati ubhayatra avyābhicārāt.

To the extent that the grounds establish existence to be excluded from substance [, quality, and action], to that extent [they] establish existence not even to exist; for [the grounds] do not deviate from [i.e., permit] both [conclusions, i.e., that existence is excluded from substance, quality, and action and that existence does not exist].

The last case is parasitic upon the case just examined. The adherents of Vaiśeṣika doctrine believe that a substratum (dharmin) is the cause of an observer's idea of a subtratum. In virtue of this belief, they hold that each

substratum has the superstratum (dharma) of being the cause of the idea of that substratum.[31] In light of the foregoing argument, one can arrive at two other purportedly incompatible conclusions. If one concluded above that existence belongs to some category other than substance, quality, or action, then one can conclude that existence is the cause of our idea of existence; if one concluded that existence does not exist, since the only categories there are are substance, quality, and action, then one can conclude, somewhat awkwardly, that existence is the cause of our idea of non-existence.[32] And so Śankarasvāmin adds:

Ayam eva hetuḥ asmin eva pūrva-pakṣe asya eva dharminaḥ yaḥ viśeṣaḥ satpratyāya-kartṛtvam nāma tat-viparītam asat-pratyāya-kartṛtvam api sādhayati ubhayatra avyābhicārāt.

Precisely these grounds establish with respect to this very opponent [envisaged in the case above] just this substratum [i.e., existence] is the cause even of the idea of non-existence, which is opposite to the superstratum of being the cause of the idea of existence; for [these grounds] do not deviate from [i.e., permit] both [conclusions, i.e. that existence is the cause of the idea of existence and that existence is the cause of the idea of nonexistence].

B.

The next problem to be confronted is the problem of how Śankarasvāmin understands the structure of argument (sādhana). To answer this question, let us review only the descriptive portions of supersection Ø.1, where Śankarasvāmin illustrates and describes the structure of sādhana. Then, let us examine for ambiguity the principal terms he employs therein. Finally, let us look at supersection Ø.222, paying special attention to section Ø.2222 (Cf. Part I).

B1.

Śankarasvāmin describes sādhana (argument) as follows:

Ø.1 Sādhana is statements of pakṣa [i.e., conclusion], hetu [i.e., minor premiss], and dṛṣṭānta [i.e., the major premisses and their examples]. By the statements of pakṣa, hetu, and dṛṣṭānta, a state-of-affairs unknown to the questioners is conveyed [to them].

Ø.11 Pakṣa is an established substratum [i.e., substratum p] desired by the proponent to be established to qualified by [i.e., to have] an

established qualifier [i.e., superstratum S]. It is implicit that it [i.e., pakṣa] is not excluded by perception, inference, tradition, common sense, or its own statement.

Ø.12 Hetu [i.e., superstratum H] has three forms: [It] is a superstratum in pakṣa [i.e., substratum p], [it] is in sapakṣa, and [it] is not in vipakṣa.

Ø.121 Sapakṣa is any substratum similar [to pakṣa, i.e., substratum p,] insofar as [both it and pakṣa] have the same superstratum to be established [i.e., superstratum S].

Ø.122 Vipakṣa is where that which is to be established [i.e., superstratum S] is not.

Ø.13 Dṛṣṭānta is two-fold insofar as either [both it and pakṣa] have the same superstratum [i.e., superstratum S] or [both it and pakṣa] do not have the same superstratum [i.e., superstratum S].

Ø.131 Dṛṣṭānta insofar as [both it and pakṣa] have the same superstratum is such that hetu [i.e., superstratum H] is said to be in sapakṣa.

Ø.132 Dṛṣṭānta insofar as [both it and pakṣa] do not have the same superstratum is such that when there is an absence of that which is to be established [i.e., superstratum S] there is an absence of hetu [i.e., superstratum H].

B2.

From this translation we can isolate the following ambiguities in the terms he uses. The term "pakṣa" denotes: (1) the statement which is a conclusion of an argument, (2) the state-of-affairs expressed by the conclusion of an argument, and (3) the substratum mentioned in the conclusion of an argument. The term "hetu" denotes: (1) the statement which is the minor premiss of an argument,[33] (2) the superstratum mentioned in the minor premiss of an argument, and (3) an abbreviation for the full formal grounds underlying the conclusion of an argument (sādhana). The term "dṛṣṭānta" abbreviates both "sādharmya-dṛṣṭānta" (i.e., dṛṣṭānta insofar as [both it and pakṣa] have the same superstratum) and "vaidharmya-dṛṣṭānta" (i.e., dṛṣṭānta insofar as [both it and pakṣa] do not have the same superstratum). Each of these terms is in turn ambiguous. Each denotes (1) the statement which expresses the major premiss together with its example, (2) the statement of the major premiss alone, (3) the example given for the major premiss, and (4) the state-of-affairs expressed by the major premiss. Furthermore, "sādharmya-

dṛṣṭānta" denotes any substratum such that it is sapakṣa and superstratum H is in it; and "vaidharmya-dṛṣṭānta" denotes any substratum such that it is vipakṣa and superstratum H is not in it. The term "artha" denotes: (1) a state-of-affairs (cf. the second sense of "paksa") and (2) a substratum (cf. the third sense of "pakṣa"). Finally, let us note that superstratum S is named sometimes by the expression "sādhya-dharma" (i.e., "that which is to be established"). This expression, sometimes abbreviated as "sādhya", denotes: (1) the statement which is the conclusion of an argument, (2) the state-of-affairs expressed by the conclusion of an argument, and (3) the superstratum mentioned in the conclusion of an argument. (cf. pakṣa.)

B3.

Having delved into the various senses of the principal terms of the passage with which we are now concerned, let us see what corresponds to Śankarasvāmin's description of sādhana to what in our analysis. One correspondence which one might see is one between the deduction-schema and trirūpa (i.e., the three forms mentioned in Ø.12). That is, one might contend this: on the one hand, the criteria provided by trirūpa (cf. Ø.12) give, for any particular state-of-affairs of a certain kind, the kinds of conditions which must be met for other states-of-affairs to be sufficient to guarantee the existence of the former in virtue of the existence of the latter; while, on the other hand, the criteria implicit in the deduction-schema[34] give, for any particular statement of a certain form, the forms which must be met for other statements to be sufficient to guarantee the truth of the former to follow from the truth of the latter. More specifically, one might contend that the first, second, and third forms of trirūpa stipulate for the world what the minor premiss, major premiss 2, and major premiss 1 stipulate for the statement of deduction. For this correspondence to hold, the second and third forms of trirūpa must be logically equivalent.[35] But the two forms are not logically equivalent, and hence the correspondence does not hold: in particular, what the second form of trirūpa exacts from the world does not correspond to what major premiss 2 exacts from a statement in a deduction.

To show this lack of logical equivalence, we shall first ascertain under just what conditions the major premisses are true or false and then scrutinize what each form of trirūpa asserts. In turning to the first task, let us begin by rehearsing a few concepts from modern logic. First, the major premisses, which we have already stated to be logically equivalent, are themselves

logically equivalent to an expression of the form "Nothing which has *H* does not have *S*", or symbolically, "$\sim(\exists x)(Hx \wedge \sim Sx)$". Secondly, all possible distributions which two superstrata can have with respect to all substrata can be depicted. To do this, we merely assume that every substratum either has or has not a superstratum (i.e., an ontic version of the Law of Excluded Middle) and that no substratum both has and has not a superstratum (i.e., an ontic version of the Law of Non-contradiction). From these assumptions it follows that there are only nine possible distributions. These distributions are shown in Figure 1, in diagrams which are to be interpreted as follows:

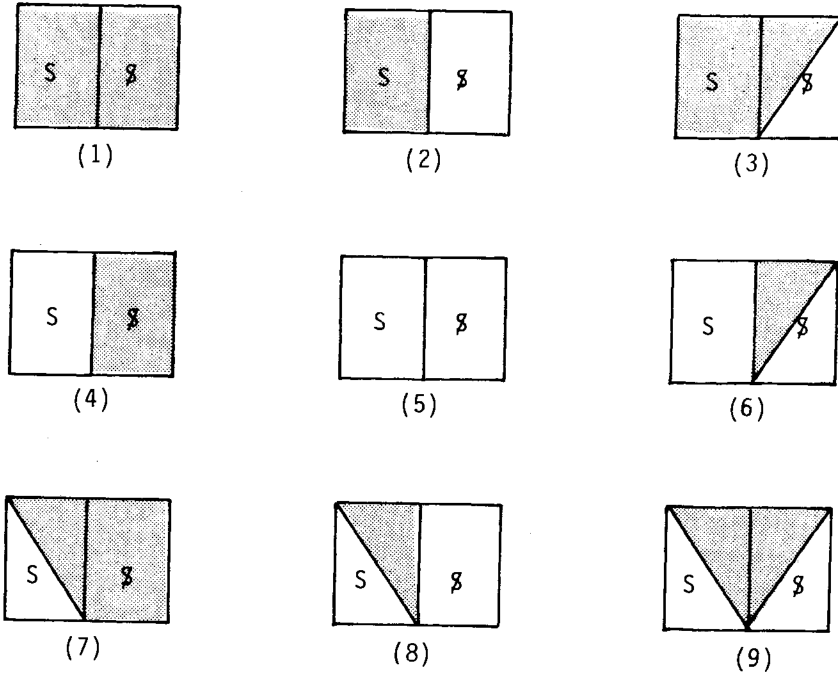


Fig. 1.

The area of each box corresponds to all the substrata in the world. The area of each half-box marked "*S*" corresponds to all the substrata which have the superstratum *S*. The area of each half-box marked "*S̸*" correspond to all the substrata which do not have the superstratum *S*. The shaded area in each box corresponds to all the substrata which have the superstratum *H*. And the unshaded area corresponds to all the substrata which lack the superstratum *H*.

Now we ask the question, what distributions depicted in the diagrams does the expression "Nothing which has H does not have S" (i.e., "$\sim(\exists x)(Hx \wedge \sim Sx)$") fit? Clearly the distributions in diagrams (1), (3), (4), (6), (7), and (9) depict cases wherein there is something which has H but does not have S (i.e., $(\exists x)(Hx \wedge \sim Sx)$). But this is the contradictory of the expression we are interested in. The expression we are interested in, then, fits the distributions depicted by the complementary set of diagrams, (2), (5), and (8), wherein there is nothing which has H and does not have S (i.e., $\sim(\exists x)(Hx \wedge \sim Sx)$).

Having clarified the conditions under which the major premisses are deemed true or false, we must turn to our second task, the scrutiny of what is asserted in trirūpa. This task requires that we address ourselves to a fundamental problem: the problem of concision of expression in Sanskrit works. Our author is in a trend exhibited in Sanskrit works as increasing over time from the Vedic period wherein, to achieve concision of expression, Sanskrit authors availed themselves of three devices – nominalization,[36] compounding, and ellipsis. The result of the use of these devices is that what would have been explicit is rendered implicit.[37] So, to properly understand trirūpa, we must restore what is implicit to what is explicit by reversing the effect of these devices, that is, by denominalization, parsing compounds, and supplying what has been ellipsed.

To insure that our restoration is as clear as possible, we ask the reader to bear the following in mind. First, each of the three clauses in trirūpa are marked, respectively, by the numerals "1", "2", and "3" each followed by a decimal point. The initial version of each clause is marked by the numeral "1" following the decimal point. Every alteration of a clause is shown in its label by a change in the numeral which follows the decimal point. Secondly, each Sanskrit sentence is paired with a literal English translation. We have tried our best to mirror the pertinent syntactical features of each Sanskrit sentence in its English translation. To this end, we have deviated from two standard practices: Sanskrit compounds, usually transliterated as one orthographic unit, have been broken into their lexical components by the insertion of hyphens between those components; also, Sanskrit compounds, usually translated as English phrases, have been rendered, somewhat factitiously, as English compounds. Finally, restored sentences are not to be thought of as surface sentences (i.e., sentences likely to be found in the Sanskrit corpus) but rather as representations of deeper sentences (i.e., structues underlying sentences actually found in a portion of the Sanskrit corpus). Consequently,

they ought not to be expected to obey the constraints of surface grammar (e.g., constraints on Sanskrit word order).

To demonstrate what we mean, we shall begin our restoration with the first form, since it is easily treated in the manner we have in mind.[38] By supplying what has been ellipsed, we obtain:

1.1 *S* [Hetu-dharmasya] pakṣa-dharma-tvam.
1.1 *E* [Superstratum *H* has] pakṣa-superstratum-ness.

Denominalization[39] of this sentence yields:

1.2 *S* [Hetu-dharmaḥ] pakṣa-dharmaḥ asti.
1.2 *E* [Superstratum *H*] is a pakṣa-superstratum.

We parse the compound to obtain:

1.3 *S* [Hetu-dharmaḥ] pakṣe dharmaḥ asti.
1.3 *E* [Superstratum *H*] is a superstratum in pakṣa.

And we simplify as follows:

1.4 *S* [Hetu-dharmaḥ] pakṣe asti.[40]
1.4 *E* [Superstratum *H*] is in pakṣa.

Since the second form is the most difficult, we shall treat the last form next. Again, the first step is to supply what has been ellipsed.

3.1 *S* [Hetu-dharmasya] vipakṣe a-sattvam.
3.1 *E* [Superstratum *H* has] non-existence in vipakṣa.

By denominalizing, we obtain:

3.2 *S* [Hetu-dharmaḥ] vipakṣe na asti.[41]
3.2 *E* [Superstratum *H*] is not in vipakṣa.

Because the next step is to replace "vipakṣa," as it occurs in the third form, by its definition, we must now treat the definition of "vipakṣa" in the same manner as we have treated the other sentences. The definition is this:

V1 *S* Vipakṣaḥ yatra sādhyam na asti.
V1 *E* Vipakṣa is where that which is to be established is not.

By supplying what has been ellipsed and by substituting the expression "saḥ

arthaḥ yasmin" ("that substratum in which") for the word "yatra" ("where"), we obtain this definition:

V2 *S* Vipakṣaḥ saḥ arthaḥ yasmin sādhya[-dharmaḥ] na asti.
V2 *E* Vipakṣa is that substratum in which [superstratum] *S* is not.

Now we replace the definiendum (i.e., the part which is defined in a definition), "vipakṣa," as it occurs in the third form of trirūpa, with the definiens (i.e., the defining part of the definition) "saḥ arthaḥ yasmin sādhya [-dharmaḥ] na asti" ("that substratum in which [superstratum] *S* is not"), and thereby obtain:

3.3 *S* [Hetu-dharmaḥ] tasmin arthe yasmin sādhya[-dharmaḥ] na asti na asti.
3.3 *E* [Superstratum *H*] is not in that substratum in which [superstratum] *S* is not.

This result, however, is amphibolous in two ways. First, what the negative particle (the second in the Sanskrit and the first in the English) negates may be either the entire remainder of the sentence, in which case the negative particle is said to have wide scope, or merely the main clause, in which case the negative particle is said to have narrow scope. These two construals are shown below by a pair of sentences which are slight modifications of 3.3 and in which we use corner quotation marks to lay off the scope of each negative particle.

3.31 *S* ⌜[Hetu-dharmah] tasmin arthe asti ⌜yasmin sādhya[-dharmaḥ] na asti⌝⌝ [iti] na.
3.31 *E* It is not the case that ⌜[superstratum *H*] is in that substratum ⌜in which [superstratum] *S* is not⌝⌝.

and

3.32 *S* ⌜[Hetu-dharmaḥ] tasmin arthe na asti⌝ ⌜yasmin sādhya [-dharmaḥ] na asti⌝.
3.32 *E* ⌜In that substratum in which [superstratum] *S* is not⌝ ⌜[superstratum *H*] is not⌝.

Secondly, the expression "tasmin arthe yasmin" ("in that substratum in which") may mean only some substratum or every substratum. This compounding of the amphibolies leaves our sentence liable to four construals. To

construe the expression "tasmin arthe yasmin" ("in that substratum in which") either in 3.31 to mean every substratum or in 3.32 to mean some substratum leads, respectively, to the unlikely criteria that in some substratum in which superstratum *H* does not occur superstratum *S* does and that in some substratum neither superstratum *H* nor superstratum *S* occur. In contrast, to construe the expression either in 3.31 to mean some substratum or in 3.32 to mean every substratum leads, in both cases, to the very likely criteria that there is no substratum in which superstratum *H* occurs and superstratum *S* does not and that in every substratum in which superstratum *S* does not occur superstratum *H* does not. Indeed, these latter criteria are logically equivalent.

The question now arises: How are we to choose between these grammatically distinct but logically equivalent construals? This question will be dealt with below. For the moment, we shall assume that 3.31 is the sentence which properly displays the scope of the negative particles and that just some substratum is what is meant by the expression "tasmin arthe yasmin" ("in that substratum in which"). This construal can be displayed in Sanskrit as follows:

3.4 *S* ⌜Tasmin arthe [hetu-dharmaḥ] asti ⌜yasmin sādhya[-dharmaḥ] na asti⌝⌝ [iti] na.
3.4 *E* It is not the case that ⌜[superstratum *H*] is in a substratum ⌜in which [superstratum] *S* is not⌝⌝.

Treating the second form of trirūpa in the same manner as above, we supply first what has been ellipsed.

2.1 *S* [Hetu-dharmasya] sapakṣe sattvam.
2.1 *E* [Superstratum *H* has] existence in sapakṣa.

Then we denominalize the result.

2.2 *S* [Hetu-dharmaḥ] sapakṣe asti.[42]
2.2 *E* [Superstratum *H*] is in sapakṣa.

Now turning to the definition of "sapakṣa," we supply what has been ellipsed there as well.

S1 *S* [Tasya pakṣasya ca] sādhya-dharma-sāmānyena [pakṣena] samānaḥ arthaḥ sapakṣaḥ.

S1 *E* Through superstratum-*H*-ness [of it and pakṣa], any substratum similar [to pakṣa] is sapakṣa.

This definition is denominalized to yield:

S2 *S* [Tasya] sādhya-dharmaḥ [pakṣasya] sādhya-dharmena samānaḥ iti anena [pakṣena] samānaḥ arthaḥ sapakṣaḥ.

S2 *E* Insofar as [its] superstratum *S* is the same as [pakṣa's] superstratum *S*, any substratum similar [to pakṣa] is sapakṣa.

After reflecting on how the expression "iti anena" ("insofar as") relates the subordinate clause to the main clause, we see that the subordinate clause specifies the respect in which a substratum be similar (samāna) to pakṣa, namely, in the respect that a substratum and pakṣa have the identical (samāna) superstratum.[43] Also, it is reasonable to assume that the word "samāna" ("similar") restricts any two things to be regarded as samāna (i.e., similar, as opposed to identical) to non-identical things. In view of these two considerations, we rewrite S2 as follows:

S3 *S* Saḥ arthaḥ yasmin sādhya-dharmaḥ asti yaḥ pakṣāt bhinnaḥ sapakṣaḥ.

S3 *E* That substratum in which superstratum *S* is and which is different from pakṣa is sapakṣa.

Substituting for the definiendum "sapakṣa" mentioned in the second form of trirūpa the definiens "saḥ arthaḥ yasmin sādhya-dharmaḥ asti yaḥ pakṣāt bhinnaḥ" ("that substratum in which superstratum *S* is and which is different from pakṣa"), we obtain:

2.3 *S* [Hetu-dharmaḥ] tasmin arthe yasmin sādhya-dharmaḥ asti yaḥ paksāt bhinnaḥ asti.

2.3 *E* [Superstratum *H*] is in that substratum in which superstratum *S* is and which is different from pakṣa.

Again we are confronted with the expression "tasmin arthe yasmin" ("in that substratum in which"), and so again we are confronted with the expression's amphiboly. Although in our discussion of 3.3 we choose to understand the expression as meaning just some substratum, nevertheless here we choose to understand it as meaning every substratum. For surely the criterion is not that there be just some substratum different from pakṣa in which superstratum

H and superstratum S occur; and so the criterion must be that superstratum S occurs in whatever substratum different from pakṣa superstratum H occurs. This construal of 2.3 is put more conspicuously in Sanskrit as follows:

2.4 *S* Yasmin arthe [hetu-dharmaḥ] asti yaḥ pakṣāt bhinnaḥ tasmin sādhya[-dharmaḥ] asti.
2.4 *E* In whatever substratum different from pakṣa [superstratum H] is, [superstratum] S is.

Now that we have ferreted out the unexpurgated version of the second and third forms of trirūpa, we can see that they are not logically equivalent. After all, for any valid deduction in which the premisses are true, it is true that if substratum p does not have superstratum S then it does not have superstratum H; but it is false that if substratum p has superstratum H then it both has superstratum S and is not identical with itself. Put in terms of symbols, it is false that[44]

$$(\forall x)\,(\sim Sx \rightarrow \sim Hx) \equiv (\forall x)\,(Hy \rightarrow (Sy \wedge y \neq p))$$

Only two assumptions underlying this conclusion might be challenged: that the same expression "tasmin arthe yasmin" ("in that substratum in which") is construed differently in 2.3 and 3.3, though 2.3 and 3.3 seem to have the same grammar; and that the definition of sapakṣa is such that what is similar to pakṣa cannot be pakṣa itself. A defense of these two construals not only with render the conclusion we have reached irrefragable but also will clarify a number of enigmas about trirūpa in general and this text in particular.

To see why the expression "tasmin arthe yasmin" ("in that substratum in which") is construed differently in 2.3 and 3.3, let us compare the two forms, first as described in ∅.12(a) and later as illustrated in ∅.12(b). We recall that by supplying what has been ellipsed and by denominalizing that result, we obtain from "sapakṣe sattvam" ("existence in sapakṣa") and "vipakṣe asattvam" ("non-existence in vipakṣa")

2.2 *S* [Hetu-dharmaḥ] sapakṣe asti.
2.2 *E* [Superstratum H] is in sapakṣa.

and

3.2 *S* [Hetu-dharmaḥ] vipakṣe na asti.
3.2 *E* [Superstratum H] is not in vipakṣa.

respectively. In illustrating the application of these two forms to an inference, Śankarasvāmin alludes to the following inference, which he regards to be valid and to have true premisses.

Major Premiss 1 *S*:	Yat nityam tat a-kṛtakam.
Example 1 *S*:	Yathā ākāśa-ādi iti.
Major Premiss 2 *S*:	Yat kṛtakam tat a-nityam.
Example 2 *S*:	Yathā ghaṭa-ādi iti.
Minor Premiss *S*:	Śabdaḥ kṛtakaḥ.
Conclusion *S*:	Śabdaḥ a-nityaḥ.

Major Premiss 1 *E*:	Whatever is eternal is non-produced.
Example 1 *E*:	For example, sky, etc.
Major Premiss 2 *E*:	Whatever is produced is non-eternal.
Example 2 *E*:	For example, pot, etc.
Minor Premiss *E*:	Sound is produced.
Conclusion *E*:	Sound is non-eternal.

With respect to this inference, Śankarasvāmin claims that superstratum *H*, kṛtaka-tvam (produced-ness) satisfies the criteria of trirūpa; in particular, he claims

2.21 *S* Kṛtaka-tvam . . . sapakṣe eva asti.
2.21 *E* Produced-ness . . . is only in sapakṣa.

and

3.21 *S* Kṛtaka-tvam . . . vipakṣe na asti eva.
3.21 *E* Produced-ness only . . . is not in vipakṣa.

We see that besides the overt mention of a particular superstratum, the only difference between 2.2 and 3.2 on the one hand and 2.21 and 3.21 on the other is the mention of the word "eva" ("only") in the latter and its absence in the former.

One use of the particle "eva" ("only"), the one pertinent here, is to indicate a relation between two classes. In particular, it indicates either that one class includes another (i.e., that every member of the latter class is a member of the former) or that one class overlaps another (i.e., that the two

classes have a member in common).[45] To see exactly how this works, consider the following sentence-schema for a simple copulative Sanskrit sentence:

$$G_1 - G_2 - \text{copula} - .$$

(where "G_1" and "G_2" denote general terms.[46])

Now, as the reader can see, the particle can be placed in three different positions in the sentence-schema and each placement causes a sentence fitting the schema to express a different relation between the class of objects of which G_1 is true and the class of objects of which G_2 is true. In the first position, the particle "eva" ("only") causes the sentence to tell its reader that the class of objects of which G_1 is true includes the class of objects of which G_2 is true. In the second position, it causes the sentence to tell its reader instead that the class of objects of which G_2 is true includes the class of objects of which G_1 is true. And in the third position, it causes the sentence to tell its reader that the two classes have an object in common. These three configurations of simple copulative Sanskrit sentences and the relations between two classes which they express are summarized below.[47]

G_1 eva G_2 copula	$g_2 \subseteq g_1$
G_1 G_2 eva copula	$g_1 \subseteq g_2$
G_1 G_2 copula eva	$g_1 \cap g_2$

(where "G_1" and "G_2" denote general terms and "g_1" and "g_2" denote classes of objects of which G_1 and G_2 are true respectively. "$\subseteq$" means "is included in" and "$\cap$" means "overlaps".)

The use of the particle "eva" on 2.21 and 3.21 can be made clearer by denominalizing each as follows:

2.21* *S* Kṛtakaḥ . . . sapakṣaḥ eva.
2.21* *E* Only sapakṣa are . . . produced things.
3.21* *S* Kṛtakaḥ . . . vipakṣaḥ na asti eva.
3.21* *E* No vipakṣa is . . . a produced thing.

In the first case, Śankarasvāmin claims that the class of substrata which are produced (kṛtaka) include the class of substrata which are sapakṣa; that is to say, he claims that whatever is produced (kṛtaka) is sapakṣa. In the second case, Śankarasvāmin claims that the class of substrata which are vipakṣa does not overlap with the class of substrata which are produced (kṛtaka). The

explicit indication by the particle "eva" ("only") in the illustration of how the pertinent classes relate corresponds to our construal of the expression "tasmin arthe yasmin" ("in that substratum in which") in 2.3 and 3.3. Śankarasvāmin's illustration, therefore, confirms the construals of 2.3 and 2.4 and of 3.3 as 3.4.

This brings us to the problem of how to interpret the word "samāna" ("similar"). For this, we draw the reader's attention to Śankarasvāmin's formulation of sādharmya-dṛṣṭānta (i.e., dṛṣṭānta insofar as [both it and pakṣa] have the same superstratum) and vaidharmya-dṛṣṭānta (i.e., dṛṣṭānta insofar as [both it and pakṣa] do not have the same superstratum), namely,

2.11 *S* Hetoḥ sapakṣe eva asti-tvam.
2.11 *E* Existence of [superstratum] *H* only in sapakṣa.

and

3.11 *S* Sādhya-abhāve hetoḥ abhāvaḥ eva.
3.11 *E* Whenever there is [superstratum] -*S*-absence, there is absence of [superstratum] *H*.

First, let us denominalize 3.11. To do this, we must avail ourselves of relative pronouns as follows:

3.12 *S* Yasmin arthe sādhya[-dharmaḥ] na asti tasmin hetu[-dharmaḥ] na asti eva.
3.12 *E* [Superstratum] *H* is not in a substratum in which [superstratum] *S* is not.

That the expression "tasmin arthe yasmin" ("in that substratum in which") is to be construed as meaning some substratum is shown by the particle "eva" ("only"); for, as we saw above, the position of this particle in a simple copulative Sanskrit sentence indicates the relation which obtains between the two classes. In this case, it indicates that the class of substrata in which superstratum *S* does not occur and the class of substrata in which superstratum *H* does occur overlap – a state-of-affairs which the negative particle (that last in the Sanskrit and the first in the English) negates. The fact that 3.12 corresponds to 3.4 shows, furthermore, that the set of substrata which satisfy the criterion expressed by the third form of trirūpa is identical with the set any of whose members may be named as a vaidharmya-dṛṣṭānta (i.e.,

dṛṣṭānta insofar as [both it and pakṣa] do not have the same superstratum) in its second sense (cf. p. 364 above). Secondly, let us denominalize 2.11.

2.12 *S* Hetoḥ sapakṣe eva asti.
2.12 *E* [Superstratum] *H* is in sapakṣa only.

This differs in generality from 2.21 and in unequivocality from 2.2. Clearly, the class of substrata which satisfy the criterion expressed by the second form of trirūpa is identical with this class any of whose members may be named as sādharmya-dṛṣṭānta (i.e., dṛṣṭānta insofar as [both it and pakṣa] have the same superstratum) in its third sense (cf. p. 364).

Now, if pakṣa cannot be its own sādharmya-dṛṣṭānta (in its second sense), as there is every reason to believe, then pakṣa cannot be its own sapakṣa, for the set of substrata circumscribed for each is the same. It is for this reason that Śankarasvāmin defined "vipakṣa" as "yatra sādhyam na asti" ("where [superstratum] *S* is not") but did not define "sapakṣa" simply as "yatra sādhyam asti" ("where [superstratum] *S* is"). To preclude pakṣa from satisfying the definition of "sapakṣa," one must construe "samāna" ("similar"), when it is true of two objects, to be true of two different objects: in other words, nothing is similar to itself. Therefore, the fundamental division of substrata is not bipartite between sapakṣa and vipakṣa, which division, though disjoint, is not exhaustive,[48] instead, the fundamental division of substrata is a tripartite one among pakṣa, sapakṣa, and vipakṣa, which division is both exhaustive and disjoint.

The inverse of the erroneous view that the second and third forms of trirūpa are logically equivalent is the equally erroneous view that section ∅.222[49] gives the conditions under which the major premisses of an inference are false. If the inverse view were true, then the subsections of ∅.222 would be assigned as follows to the diagrams adduced above (cf. Figure 1).[50]

∅.2221	(1)
∅.2222	(5)
∅.2223	(7)
∅.2224	(3)
∅.2225	(9)
∅.2226	(4)
∅.2226	(6)

But what is described in passage ∅.2222 does not correspond to what is

depicted in diagram (5). Why? because, on the one hand, what diagram (5) depicts is a situation in which none of the substrata have superstratum *H* but every substratum either has or has not superstratum *S*; while on the other hand, what is described in passage Ø.2222 is a condition in which only one of the substrata has superstratum *H*, namely pakṣa, while every substratum either has or has not superstratum *S*. In other words, in the diagrams, the substrata of the world are partitioned into disjoint classes, those which have superstratum *S* and those which do not; but, in section Ø.2222, the substrata of the world are partitioned into three disjoint classes, the substratum which is pakṣa, the substrata other than pakṣa which have superstratum *S*, and the substrata other than pakṣa which do not have superstratum *S*.

What evidence is there that this tripartite division underlies passages Ø.2222? The text itself! It states:

Tat hi nitya-a-nitya-pakṣābhyām [hetoḥ] vyāvṛtta-tvāt nitya-a-nitya-vinirmuktasya ca anyasya a-sambhavāt saṃśaya-hetuḥ.

There is reason for doubt because [superstratum *H*] is excluded from both pakṣa which is eternal [i.e., sapakṣa of the example] and pakṣa which is not eternal [i.e., vipakṣa of the example] and because what is other [than pakṣa which is eternal and pakṣa which is not eternal] to be different from both what is eternal and what is not eternal is impossible.

What is crucial here is the expression "what is other" ("anya").[51] The expression invites the question: other than what? And the grammar of the sentence gives the answer: other than both pakṣa which is eternal and pakṣa which is not eternal. And the pair of pakṣa referred to here are sapakṣa and vipakṣa respectively.[52] These pakṣa do not include every substratum, for then the expression "what is other" ("anya") would fail to denote any substratum, a result which would render the sentence senseless. But obviously the expression denotes pakṣa.

As a result, we see the following: while sections Ø.2221 and Ø.2223 through Ø.2226 give examples and descriptions of the conditions wherein the major premisses of an inference are rendered false, that is, wherein the third form of trirūpa is violated; section Ø.2222 gives an example and description of the condition wherein no substratum other than pakṣa has both a superstratum *H* and superstratum *S*, that is, wherein the second form of trirūpa is violated.

III

We are now ready to begin the last part of this paper. Here, as promised at the outset, we shall assess the degree to which Śankarasvāmin has succeeded in articulating the structure to which he had addressed himself in the *Nyāya-praveśa*. In particular, we shall state and show the extent to which Śankarasvāmin has managed, if at all, to distinguish the various level of structure circumscribing his subject-matter.

We contend that Śankarasvāmin failed to distinguish between the dialectic and forensic levels as well as between the ontic and epistemic ones. Moreover, we contend that although he did distinguish the dialectic level from the epistemic one, nonetheless, he failed to distinguish them properly.

Let us demonstrate the second claim first. We remind the reader of the opening lines of the work (i.e., ∅) where Śankarasvāmin states:

Sādhanam dūṣanam ca eva sa-ābhāsam para-samvide; Pratyakṣam anumānam ca sa-ābhāsam tu ātma-samvide.

Argumentation and refutation together with [their] semblances pertain to another's knowing; perception and inference together with [their] semblances pertain to one's own knowing.

Here we see described by Śankarasvāmin precisely that which separates the epistemic from the dialectic, namely, an observer of the world augmenting his own set of beliefs as opposed to an observer augmenting the set of belief of another observer. However, that he failed to abide fully by this distinction is shown by his definition of inference (anumāna):

Anumānam liṇgāt artha-darśanam. Lingam punar trirūpam uktam.

Inference is the apprehension of a state-of-affairs through [the apprehension of] a mark. Furthermore, a mark is said to have three forms.

Here, we are told that the conclusion of an inference (anumāna) is determined merely by trirūpa; above, we saw that the conclusion of an argument (sādhana) is determined by more than just trirūpa. Now, if examples are irrelevant to inference, as they are neither discussed nor even alluded to when Śankarasvāmin broaches inference, then trirūpa, whose second condition is stated as a restriction to eliminate arguments in which Major Premiss 2 fails to have an example which must be (other than pakṣa itself) satisfying

it, fails to sustain the separation between the dialectic level on the one hand and the epistemic on the other.

How might such a confusion come about? We recall that the definitions of sādharmya-dṛṣṭānta (i.e., dṛṣṭānta insofar as [both it and pakṣa] have the same superstratum) and vaidharmya-dṛṣṭānta (i.e., dṛṣṭānta insofar as [both it and pakṣa] do not have the same superstratum) capture the set of substrata from which an example can be drawn for Major Premiss 2 and Major Premiss 1 respectively. We also recall that the term dṛṣṭānta is ambiguous, denoting, among other things, either an example or its major premiss. (Cf. p. 363). It is easy to imagine that one could mistake the description of the set of substrata which are dṛṣṭānta (*qua* example) for the set of substrata which satisfy dṛṣṭānta (*qua* major premiss). In the case of vaidharmya-dṛṣṭānta (i.e., dṛṣṭānta insofar as [both it and pakṣa] do not have the same superstratum), the error makes no difference; but in the case of sādharmya-dṛṣṭānta (i.e., dṛṣṭānta insofar as [both it and pakṣa] have the same superstratum), the error is crucial.

Our first claim, to which we now return, is itself composed of two other claims, namely, that Śankarasvāmin failed to discern between the dialectic and forensic levels, and that he failed to discern between the ontic and epistemic ones. The former claim is substantiated by the fact that Śankarasvāmin mixes together forensic and dialectic considerations. Specifically, in sections ∅.211 through ∅.215 he cites cases where sādhana (argumentation) fails because the observer who is undertaking to add beliefs to the set of beliefs of another observer has himself acquired a belief which renders his set inconsistent. (Cf. pp. 355–356.) While the acquisition of this belief accrues to a fact of the dialectic level, the inconsistency resulting from this acquisition is pertinent only to the forensic level. The latter claim is substantiated by the fact that Śankarasvāmin is confused about the ontic structure underlying the epistemic and dialectic structure of his subject-matter. We recall that in those passages where ontic facts bear on dialectic and epistemic ones (namely, ∅.12 and ∅.222), Śankarasvāmin has only nine cases in mind. We know from our earlier discussion that a world whose substrata are divided into those having superstratum S and those not having superstratum S can be distributed only in nine ways with respect to occurrences of superstratum H. (Cf. p. 365.) Yet we also know from our previous examination of one passage (namely, ∅.2222) that Śankarasvāmin has in mind at least one case wherein the occurrences of superstratum H are distributed with respect to substrata,

divided into those other than pakṣa having superstratum S, those other than pakṣa not having superstratum S, and pakṣa. (cf. p. 376.) This confusion between a bipartite and tripartite view of substrata of the world shows that the ontic level had yet to come under isolated scrutiny by Śankarasvāmin.

What we see here in the *Nyāyapraveśa* are four levels of structure, well-circumscribed but incompletely understood. This compendium of imperfect knowledge of earlier Indian logicians turns out to be a source of new insight for later Indian logicians. Of special interest is this fact. In Navya-nyāya the attempt to define the relation of pervasion (vyāpti) in terms of a tripartite division of substrata into pakṣa, sapakṣa, and vipakṣa is abandonned; instead later Indian logicians resort directly to superstratum H (hetu-dharma), superstratum S (sādhya-dharma), and substratum (adhikaraṇa). Of course, new problems arise at that point and these will be discussed in a similar study planned for another compendium of logic in India, the *Tarkasamgrahadīpika.*

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NOTES

[1] For those familiar with the jargon, the distinction here is between object-language and observer-language (or, metalanguage): illustrations are specimens of the object-language, the structure of which specimens the author is trying to describe in an observer-language.

[2] Tachikawa (tr) (ed) 1971.

[3] Dhruva (ed) 1930.

[4] Just as "epistemic" characterizes that which pertains to knowledge, as opposed to "epistemological" which characterizes that which pertains to the study of knowledge; so "ontic" characterizes that which pertains to being, as opposed to "ontological" which characterizes that which pertains to the study of being.

[5] We are trading on the sense of "dialectic" as it pertains to the Socratic dialogues, where Socrates is depicted as eliciting beliefs from his interlocutors.

[6] By the word "forensic," we intend to emphasize the sense of debate: argument for the sake of winning.

[7] Where possible we have provided a Sanskrit word from the text, one of the meanings of which corresponds to the key concepts expounded in Part I of the essay.
[8] Note this equivalence, as it will be used frequently and tacitly in the exposition to follow.
[9] "[Hetu-dharmasya] vipakṣe . . . asattvam": "[Superstratum *H*] is not in vipakṣa [i.e., substrata where superstratum *S* is not]" (in ∅.12(a)).
[10] "[Hetu-dharmasya] pakṣa-dharmatvam": "[Superstratum *H*] is a superstratum in pakṣa. [i.e., substratum *p*]" (∅.12(a)).
[11] An example of this structure is embedded in the example given in ∅.1(b).
[12] Faris 1962 Chapter 1, Section 2; Faris 1964 Chapter 2, Section 1.
[13] "Pratyakṣam anumānam ca sa-ābhāsam tu ātma-samvide": "Perception and inference together with [their] semblances pertain one's knowing" (in ∅). "Atma-pratyāyana-artham tu pratyakṣam anumānam ca dve eva pramane": "Perception and inference, by which one convinces onself [of some fact], are the only two means to knowledge" (in ∅.∅(a)).
[14] This point will be discussed below in part II.
[15] The substantiation of this claim lies in the author's rejection of arguments wherein the observer who is propounding an argument argues for a belief which the other observer already accepts. Cf. ∅.219.
[16] "Eṣām vacanāni para-pratyāyana-kale sādhanam": "Argument is such statements [uttered] when one is trying to convince another" (in ∅.1(b)).
[17] Cf. ∅.131 and ∅.132. Note that ∅.2311 through ∅.2313 and ∅.2321 through ∅.2323 are examples where this requirement is not met.
[18] This is exemplified in ∅.1(b).
[19] Cf. ∅.11. Notice that ∅.216 through ∅.218, ∅.2211, ∅.2212, and ∅.2214 are examples where this requirement is not met.
[20] That debate has a game-theoretic structure is evident. What the structure is in the case of debate in India is not evident, however. The structure we are ascribing to debate as alluded to in the *Nyāyapraveśa* is speculative, for it is an extrapolation which goes beyond the evidence of the text alone.
[21] Cf. ∅.2213.
[22] Cf. ∅.7 and ∅.8.
[23] Cases adduced by the author to illustrate violations of this restriction are given in sections ∅.211 through ∅.215.
[24] Cf. Chatterji, (ed) 1933 p. 269.
[25] That is, ∅.223 as emended above.
[26] Sanskrit authors rarely state an argument in its full form. In recasting arguments into their full form, we have only supplied what can be recovered from the abbreviated expression of the argument. Omissions of certain lines should not be taken as an error in the argument, but simply as the deletion of inessential information.
[27] Tachikawa (tr) 1971 p. 135.
[28] Our translation of this passage (∅.2231) differs from that of M. Tachikawa.
[29] Tachikawa (tr) 1971 p. 136.
[30] Again, our translation of this passage (∅.2232) differs from that of M. Tachikawa.
[31] Tachikawa (tr) 1971 p. 138.
[32] This argument is so egregiously spurious that we believe it to have been included here merely for the sake of symmetey between the final two cases and the first two cases.

[33] Whatever is the pakṣa (in sense 3) is the referent of a genitive pronoun ellipsed in the hetu (in sense 1).
[34] That is, the deduction-schema, to be meaningful, must have rules which interpret what the various symbols in it mean. Cf. Faris 1964 Chapter 8, Section 2.
[35] In talking about Dharmakīrti's formulation in the *Nyāya-bindu* of trirūpa, which corresponds almost verbatim to Śankarasvāmin's formulation, Staal states: "Thus it was recognized that the second and third conditions are equivalent and that this equivalence constitutes a logical relationship, namely, contraposition" (Staal 1969 p. 636). Cf. Faris 1962 Chapter 3, Section 8.
[36] The growth in use of nominalization in Sanskrit literature has been shown in Bloch 1906.
[37] The deletion of content through nominalization is discussed in Leech 1974 pp. 185–188.
[38] To aid those who are not conversant with Sanskrit to follow what we are arguing for, we have provided quasi-English translations for each Sanskrit sentence.
[39] Rules for nominalization, and hence for denominalization, are found in Staal 1965.
[40] If one follows the Chinese version of ∅.12(b), as we do, the first part of the Sanskrit sentence (in which Śankarasvāmin illustrates his discussion of ∅.12) would read as follows: "... kṛtakatvam prayatnānantarīyakatvam vā pakṣe asti ..."
[41] Cf. ∅.12(b): "... kṛtakatvam prayatnānantarīyakatvam vā ... vipakṣe na asti eva."
[42] Cf. ∅.12(b): ... kṛtakatvam prayatnānantarīyakatvam va ... sapakṣe eva asti ...
[43] Note that "samāna" denotes qualitative identity but "samāna" in "sāmānya" denotes numerical identity. Cf. in English: "The automobile accident at this intersection this week is the same as the one here last week" and "The person who drove the car is the same as the one who ran from the scene of the accident." Notice that the word "samāna" in "sāmānya" must mean "identical," otherwise there would have to be another clause to specify a property of the two similar properties in virtue of which the two similar properties are similar.
[44] While we agree with Staal's formulation of the two forms of trirūpa into symbols, we do not agree that the two formulae are logically equivalent. That they are not logically equivalent is shown above. The error in Staal's deduction lies on p. 636 (Staal 1960) at the top, where the transformation of the first formula to the second as well as the second to the third is incorrect. The first transformation rests on the false claim that $(x)Fx \rightarrow (x)Gx \vdash (x)(Fx \rightarrow Gx)$, and the second transformation violates the rule of Universal Generalization.
[45] Cf. Suppes 1957 Chapter 9.
[46] Cf. Quine 1950 Chapters 14 and 15.
[47] The source of this analysis are verses 190–192 in Chapter 4 of Dharmakirti's *Pramāṇavarttika*. This passage is discussed in Kajiyama 1973 on pp. 162–167, but the discussion is erroneous in some crucial respects. A more comprehensive review of this use of the particle "eva" as it is expounded by logicians and grammarians will be found in a forthcoming article now under draft by Richard Hayes and me.
[48] Two classes are disjoint when they have no members in common; and they are exhaustive when between them they include every member of the domain.
[49] In treating this section, we presuppose the emendation made above. Cf. p. 357.
[50] The two examples cited in ∅.12(b) correspond to diagrams (2) and (8).
[51] Tachikawa (tr) 1971) p. 124. Tachikawa mistranslates it as "anything."

[52] This interpretation is corroborated by the Chinese translation, as pointed as in Staal 1971, pp. 165–165.

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APPENDIX

A table for passages of Nyāyapraveśa.

∅	synopsis	d 1.1	t 120.2	/
∅ 1 (a)	sādhana	d 1.4	t 120.9	/
∅ 1 1	pakṣa	d 1.5	t 120.14	/
∅ 1 2	hetu	d 1.8	t 121.4	/
∅ 1 3	dṛṣṭānta	d 1.15	t 121.18	x
∅ 1 3 1	sādharmya	d 1.16	t 121.19	/
∅ 1 3 2	vaidharmya	d 2.2	t 121.22	/
∅ 1 (b)	sādhana	d 2.6	t 121.27	/
∅ 2 1	pakṣa-ābhāsa	d 2.13	t 122.6	x
∅ 2 1 1	pratyakṣa-viruddha	d 2.17	t 122.20	o
∅ 2 1 2	anumāna-viruddha	d 2.18	t 122.22	?
∅ 2 1 3	āgama-viruddha	d 2.19	t 122.24	o
∅ 2 1 4	loka-viruddha	d 2.20	t 122.26	o
∅ 2 1 5	svavacana-viruddha	d 2.21	t 122.29	o
∅ 2 1 6	aprasiddha-viśeṣaṇa	d 2.22	t 122.31	o
∅ 2 1 7	aprasiddha-viśeṣya	d 3.1	t 122.33	o
∅ 2 1 8	aprasiddha-ubhaya	d 3.2	t 122.36	o
∅ 2 1 9	prasiddha-sambanda	d 3.3	t 123.3	o
∅ 2 1	pakṣa-ābhāsa	d 3.5	t 123.6	x
∅ 2 2	hetu-ābhāsa	d 3.8	t 123.13	x
∅ 2 2 1	asiddha	d 3.8	t 123.15	x
∅ 2 2 1 1	ubhaya-asiddha	d 3.10	t 123.24	o
∅ 2 2 1 2	anyatara-asiddha	d 3.11	t 123.27	o
∅ 2 2 1 3	sandigdha-asiddha	d 3.12	t 123.31	o
∅ 2 2 1 4	āśraya-asiddha	d 3.14	t 123.25	o
∅ 2 2 2	anaīkāntika	d 3.15	t 124.3	x
∅ 2 2 2 1	sādharana	d 3.18	t 124.12	/
∅ 2 2 2 2	asādharana	d 3.22	t 124.19	/
∅ 2 2 2 3	sapakṣaikadésavṛtti-vipakṣavyāpin	d 4.2	t 124.26	/
∅ 2 2 2 4	vipakṣaikadeśa-vṛtti-sapakṣavyapīn	d 4.10	t 125.a	/
∅ 2 2 2 5	ubhayapakṣaikadeśa-vṛtti	d 4.16	t 125.10	/
∅ 2 2 2 6	viruddha-avyabhicarin	d 4.21	t 125.19	/
∅ 2 2 3	viruddha	d 5.2	t 125.24	x
∅ 2 2 3 1	dharma-svarūpa-viparīta-sādhana	d 5.5	t 125.32	/
∅ 2 2 3 2	dharma-viśesa-viparīta-sādhana	d 5.7	t 125.36	/
∅ 2 2 3 3	dharmi-svarūpa-viparīta-sādhana	d 5.11	t 126.7	/
∅ 2 2 3 4	dharmi-viśeṣa-viparīta-sādhana	d 5.15	t 126.14	/
∅ 2 3	dṛṣṭānta-ābhāsa	d 5.19	t 126.21	x
∅ 2 3 1	sādharmya	d 5.19	t 126.23	x
∅ 2 3 1 1	sādhana-dharma-asiddha	d 5.22	t 126.31	o
∅ 2 3 1 2	sādhya-dharma-asiddha	d 6.4	t 127.1	o
∅ 2 3 1 3	ubhaya-dharma-asiddha	d 6.7	t 127.6	o
∅ 2 3 1 4	ananvaya	d 6.10	t 127.12	o
∅ 2 3 1 5	viparīta-anvaya	d 6.12	t 127.16	o

∅ 2 3 2	vaidharmya	d 6.14	t 127.19	x
∅ 2 3 2 1	sādhya-avyāvṛtta	d 6.17	t 127.28	o
∅ 2 3 2 2	sādhana-avyāvṛtta	d 6.21	t 127.33	o
∅ 2 3 2 3	ubhaya-avyāvṛtta	d 7.2	t 128.1	o
∅ 2 3 2 4	avyatireka	d 7.4	t 128.6	o
∅ 2 3 2 5	viparīta-avyatireka	d 7.6	t 128.11	o
∅ 2	sādhana-ābhāsa	d 7.9	t 128.15	x
∅ ∅ (a)	pramāna	d 7.11	t 128.18	o
∅ 3	pratyakṣa	d 7.12	t 128.19	/
∅ 4	anumāna	d 7.14	t 128.23	/
∅ ∅ (b)	pramāna	d 7.16	t 128.26	o
∅ 5	pratyakṣa.ābhāsa	d 7.18	t 128.31	/
∅ 6	anumāna-ābhāsa	d 7.20	t 129.2	/
∅ 7	dūṣaṇa	d 8.1	t 129.8	o
∅ 8	dūṣaṇa-ābhāsa	d 8.5	t 129.16	o

/ means that the passage has been discussed and translated.
o means that the passage has only been adduced as evidence and not regarded as problematic.
x means that the passage is organizational and has no direct bearin on the content of the work.
? means that we are undecided as to the import of the section.

In columns three and four, 'd' and 't' refer to Dhruva (ed) 1930 and Tachikawa (tr) 1971 respectively; the number before the decimal point refers to the page and the number after it refers to the line of that page.

Sibajiban Bhattacharyya **Some features of the technical language of Navya-Nyāya**

I. INTRODUCTION

Navya-Nyāya is not just one school among other schools of Indian philosophy. This is primarily because Navya-Nyāya philosophers developed a technical language which became the language of all serious discourse. This language, developed within the language of realistic Vaiśeṣika ontology, was, however, found to be ontologically neutral, and was used not merely in different philosophies—for example, in Advaita Vedānta by Madhusūdana Sarasvatī, in *Advaita Siddhi*; in Pūrva Mīmāṁsā by Khaṇḍadeva, in *Bhāṭṭa-Rahasya*; in Sāṁkhya and Śākta philosophies by P. Tarkaratna, in *Pūrṇimā* and *Śaktibhāṣya*; and so forth,[1]—but also in grammar, philosophy of language, poetics, law, and other branches of study. We shall have to explain how this language could be so universally used.

In contemporary Western philosophy, the language of symbolic logic has been developed and is used extensively not merely in logic and mathematics, but also in biology and other physical sciences, in grammar (especially the grammar of formal languages), in economics, and only marginally in epistemology, ethics, and law. The discovery and development of the arithmetization of syntax and recursive function theory led to the development of Turing machines and other machine languages, which have been indispensable in computer programming. Thus the thrust and tenor of technical languages developed in the West have been mainly scientific; the application of the languages to poetics or philosophy has been almost absent. This contrast between the technical language of Navya-Nyāya and symbolic logic points to an important difference between the humanities and the sciences, which we discuss below.

The technical language of Navya-Nyāya is nonsymbolic but rigorous, and is a development of Sanskrit, just as Western syntax and semantics must use living languages like English. It is debatable whether Sanskrit was even a living language, and when Navya-Nyāya developed, it was surely a frozen language. Sanskrit as a frozen language has close affinities with artificially constructed languages as we have them in the West. We must not lose sight of the fact that Sanskrit, from ancient times, had a very rigorous grammar, so much so that Sanskrit grammarians may be regarded as founders of the science of grammar. Sanskrit, as a frozen language, has well-defined and rigorous rules of formation from an alphabet which is phonetically arranged, and the grammatical rules are linearly ordered for scope in Pāṇini's *Aṣṭādhyāyī*. So Navya-Nyāya philosophers took advantage of this feature of Sanskrit in developing their technical language.

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Navya-Nyāya language developed so that it could describe structures cognized on various occasions. Thus this language could be used in every sphere where cognition, belief, doubt, and other epistemic and doxastic factors play an essential role. This explains why this language could be used universally in the humanities, where the epistemic factors predominate. In the sciences, however, propositions are stated in total, or nearly total, independence of the knowing subject. Hence Navya-Nyāya language, which is very helpful in the humanities, does not seem to be applicable in the sciences. Although a mastery of the Navya-Nyāya language is considered essential for studying medicine (*āyurveda*), still no work of medicine has used this language. Western logic, on the other hand, developed historically so that it could be applied to mathematics and is oriented basically towards science, and is thus inappropriate for use in the humanities.

The Navya-Nyāya language is not a metalanguage in the sense of being a language about a language. It is a language that has developed so that it can *describe* a cognized structure in terms of the Navya-Nyāya theory. This is different from ordinary Sanskrit, which is used *to express* cognized structure. Thus the distinction between expressing and describing in the theoretical language of cognized structure is fundamental. Lukasiewicz stated that Aristotle used two types of *expressions* for saying the same thing. For example, 'all A is B' or 'B belongs to all A', and 'B is predicated of all A' are used indiscriminately.[2] Yet these two types of expression are radically different. 'All A is B' and 'B belongs to all A' are *expressions* of cognized structure, but 'B is predicated of all A' is of a different type containing 'predicated of', which is a theoretical term of logic or grammar, and is not an expression of the object language of the earlier expression. In other words, while 'All A is B' expresses a factual situation, 'B is predicated of all A' cannot do so, for the relation 'being predicated of' is not a factual relation, but is a grammatical or epistemic one. Thus this sentence analyzes a fact as cognized, or a statement made according to rules of grammar. This latter interpretation makes it easy to make this sentence a sentence of a metalanguage, of grammar. According to Navya-Nyāya philosophers, 'B is predicated of all A' is a *description* or *analysis*, in terms of a theory (logic or grammar), of what 'All A is B' or 'B belongs to all A' expresses.

Hence they all belong to the same *level* of expression; they are about objects. We shall now explain the Navya-Nyāya theory in terms of which all cognized structures are analyzed and rigorously described.

II. THE NAVYA-NYĀYA THEORY

We will first explain the meaning of 'cognition'.

(1) 'Cognition' is used to denote not merely propositional acts like judging, believing, disbelieving, doubting, assuming, inferring, remembering, perceiv-

ing, and introspecting, but also nonpropositional states like sensing, and so forth. In this article, however, we shall not be concerned with cognitions like sensing.

(2) 'Cognition' is always used in the episodic sense to denote an occurrence of an act, but never in the dispositional sense. The term '*saṁskāra*' is used for 'disposition' in general, physical as well as mental; in the context of cognition, '*saṁskāra*' is used to denote unconscious traces which, when stirred up or activated, produce conscious memory. We shall be dealing with what may be called, very roughly, propositional cognition episodes. These cognitions are called 'qualificative cognitions'.

Qualificative cognitions are cognitions the objects of which are relational complexes of the form *aRb*. We now introduce three epistemic definitions:

Definition 1. Qualificand of a qualificative cognition: *a* in the cognized structure *aRb* is called '*the qualificand of the cognition*', as well as '*the qualificand of **b***'.

Definition 2. Qualifier (mode) of a qualificative cognition: *b* in the cognized structure *aRb* is called 'the qualifier (mode) of the cognition' as well as 'the qualifier (mode) of *a*'.

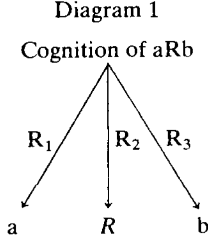
Definition 3. Qualification of a qualificative cognition: *R* in the cognized structure *aRb* is called 'the qualification of the cognition'.

Every qualificative cognition of a structure of the form *aRb* is interpreted in Navya-Nyāya theory as the cognition *of **b** in **a** by **R***. Thus 'aRb' is a term, and not a proposition in the usual Western sense. The Navya-Nyāya theory is that every qualificative cognition has to be analyzed as a cognition of something *in* something, of something *possessing* something, of something *as* something, that is, something cognized under the mode of something. In the Western tradition generally, every proposition, including relational propositions of the form *aRb*, is interpreted as *assertions* and is distinguished radically from a term. In Navya-Nyāya theory, *a*, as well as the structure *aRb*, is regarded as a complex object, and not as a proposition or fact in the sense of the *Tractatus*. We now introduce two *ontological* definitions.

Definition 4. Property (superstratum): *b* is a *property (superstratum) of **a** in the relation **R** in **aRb***.

Definition 5. Property possessor (substratum, locus): *a* is the property possessor (substratum, locus) *of **b** in the relation **R** in **aRb***.

In a cognized structure of the form *aRb*, one cognition is related to the three elements by three characteristic relations (diagram 1).



The converse relations, $\check{R}_1$, $\check{R}_2$, $\check{R}_3$, are relations of the objective factors to the cognition.

III. THE NAVYA-NYĀYA TECHNIQUE

Abstraction

Usually in Sanskrit, as in English, abstract terms are formed from given concrete terms, and concrete terms from given abstract terms. Thus, from the concrete terms "wise," "honest," and "man" we have the following abstract terms by adding the appropriate abstraction suffixes, making appropriate grammatical changes in the stem where necessary: "wis-dom," "honest-y", "man-ness." So also with given abstract terms.

But Navya-Nyāya philosophers form abstract and concrete terms from *any* terms. Thus there will be higher-order abstract terms formed from given abstract terms, and similarly higher-order concrete terms from given concrete terms.

The abstraction suffix is '—tva' or its grammatical variant '—tā' (translated as '—ness'), and the concretization suffix is '—vat' or '—mat' (translated as '—possessing'). Abstraction and concretization are inverse processes in the sense that

AC 1. (t-ness) possessing = t
(t possessing)-ness = t

where 't' is any term whatsoever, corresponding to the law of symbolic logic:

$$AW\,2. \quad [(\lambda x)Fx]. = F$$

Determiner-Determined

In *aRb*, *a is* the locus of *b* (definition 5), and therefore *has the property of being the locus* (*locus-ness*) resident in, that is, belonging to, *a*. So also *b* is the superstratum of *a* in the relation R (definition 4), and has the property *being the superstratum* (*superstratum-ness*). To say *a* is the locus *of b* is, in Navya-Nyāya terminology, to say that the locus-ness resident in *a is determined by* the superstratum-ness resident in *b*. Thus the determiner-determined relation is between properties of two correlatives. In symbols,

$$(\lambda x)xRy \text{ determines (or is determined by)} (\lambda y)Rxy.$$

In thus symbolizing the Navya-Nyāya concept we have to use 'R' in both the abstracts. But in Navya-Nyāya technical language *R* goes with the successor of R, but not with the predecessor.

The structure *aRb*, which is interpreted as *b* in *a* by *R*, is described by S1 in theoretical terms of the Navya-Nyāya system thus:

S1. *R* is the *limiting relation* of superstratum-ness resident in *b*, which superstratum-ness determines the locus-ness resident in *a*.

We now explain the concepts of limiting properties and limiting relations, that is, of limitors.

IV. THE CONCEPT OF LIMITOR

Navya-Nyāya, in developing its theory of cognition, uses the concept of limiting property and limiting relations almost continuously. In ontology, Navya-Nyāya accepts extensionality of properties, classes, relations, and so on. If two properties belong to, are located in, exactly the same objects, then they are ontologically identical. But this ontological identity cannot ensure the identity of cognized structures. One and the same object may be cognized differently, that is, through different modes of cognition. Now this theory that the same object can be cognized in and through different modes has been challenged by many philosophers. Findlay, for example, argues as follows:

> The same object can be referred to in many ways; we can think of the same city as the birth-place of Mozart or as the city which stands on the site of ancient Juvavum; the difference between the two ideas which we thus form of one and the same object, must lie in the content of those ideas. The weakness of this argument lies in the fact that it seems fairly clear that there is some difference even in the *objects* of the two ideas; if they concern the same city, they certainly also introduce us to other objects and relations which would suffice to distinguish them. For Mozart and ancient Juvavum are as much objects as the modern city of Salzburg.[3]

The reply to this objection of Findlay is to point out that the two ideas (cognized objects, in Navya-Nyāya terminology) which refer to the same object are ontologically the same, since the identity statement 'the birth-place of Mozart = the city which stands on the site of ancient Juvavum' is a true statement. The truth in Findlay's objection can be expressed in Navya-Nyāya theory of cognition in this way. The cognition of the birthplace of Mozart has the city of Salzburg as its qualificandum, and the property *being the birthplace of Mozart* as its qualifier or mode; the cognition of the city which stands on the site of ancient Juvavum has as its qualificandum the same city, and as its qualifier the property of being the city which stands on the site of ancient

Juvavum. Thus both cognitions have the same qualificandum, but they differ in their qualifiers or modes of cognition. Thus, according to Navya-Nyāya, the same object, that is, the same qualificandum, may be cognized through different modes. These modes are properties which belong to objects and are as objective as the objects themselves.

This theory that the same qualificandum may be cognized in and through different modes has a parallel in the theory of *ratio* of the fourteenth-century logician Jean Buridan:

All the same the sense, or as Buridan calls it *ratio*, given us by an object expression really is somehow involved when the verbal is an intentional one; Buridan says the object expression appellat *suam-ratioem* where we may perhaps render the term '*appellat*' (perhaps the most obscurely and multifariously employed of all medieval semantic technicalities) by saying the expression 'calls up' or 'evokes' its own *ratio*. Buridan's main point is in any case clear: that the truth-value of a sentence whose verbal is an intentional one may be changed if we change the *ratio*, the sense, given in the object expression, even if their expression still relate to the same thing in the world.[4]

Buridan here talks of ratio, that is, of aspects of objects referred to by expressions. Although Navya-Nyāya also formulates a theory of word meaning according to which a word refers to an object only under a specific mode or aspect, still Navya-Nyāya generalizes this distinction between an object and an aspect to all cognitions. The Navya-Nyāya philosophers hold the theory that all cognitions involving language essentially are a special kind of cognition. Neither perception nor even inference as a process of knowing involves any language. When one wants to communicate to others what one has cognized in perception and in inference, one uses language. In these cases, one needs language only in order to communicate one's cognitions or to discuss their truth or falsity or their nature with others. With this modification and generalization, the Navya-Nyāya concept of mode is much wider than Buridan's conception of *ratio.*

The word 'limitor' has been used in Navya-Nyāya in various senses. We shall explain here two most important uses of this important concept. (a) *In the first sense*, the word 'limitor' is used to denote the mode of cognition of an object. Thus, when one cognizes a jar under the mode of jar-ness, jar-ness becomes the limitor of the qualificandum-ness resident in the jar. This simply means that the thing jar has become the qualificandum of the cognition only insofar as it possesses jar-ness, that is, insofar as it is an instance of the universal jar-ness. As Navya-Nyāya philosophers deal with cognitions and as cognitions are transparent to introspection, there can be no doubt about what mode has been manifest in a particular cognition. Thus the limiting property of the qualificandum-ness of any cognition is always infallibly known to the knower.

The difficulty arises when one has to determine the limitor from the verbal expression of the cognition; for example, when one cognizes a particular jar as

an instance of the universal jarness, what one says is '(a) jar'. Now the word 'jar' refers to the thing jar under the mode of jar-ness. Thus jar-ness is the mode of presentation of the referent of 'jar', namely, jars. One may cognize the same thing, namely, the jar, as something containing water. If to express this cognition one uses the word 'the jar', then, of course, the mode of cognition is not the mode of presentation of the referent of the word 'the jar'. For the mode of presentation of the referent of a word is conventionally fixed, whereas a cognition of a thing may have different qualifiers at different times. As the linguistic expression of a cognition does not always give a foolproof method of determining the mode of cognition of its object, Navya-Nyāya has devised a technical language which is adequate to express the limiting properties as well as the limiting relations of cognitions. Thus, when one cognizes a particular jar as containing water, this cognition is described as follows:

The cognition which has the thing jar as its qualificandum and the property of containing water as its qualifier.

When one cognizes, that is, perceives, a particular brown jar and expresses this cognition by '(a) brown jar', this cognition is described in the technical language of Navya-Nyāya thus:

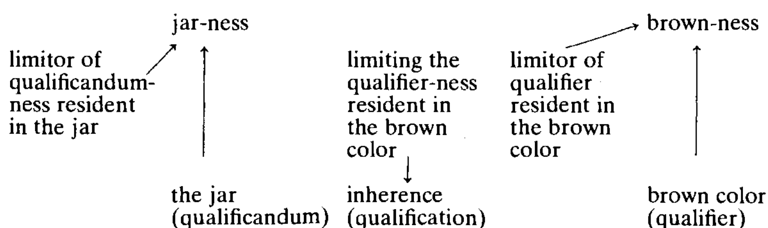
First step. The cognition the qualificandum of which is the (thing) jar and the qualifier of which is brown color.

But again the (thing) jar has been cognized as a jar, that is, under the mode of jar-ness, and the brown color has been cognized under the mode of brown-ness. Hence the entire cognition stated in the technical language of Navya-Nyāya becomes:

Second step. The cognition having its qualifier-ness, which is limited by brown-ness and the relation of inherence, and which determines the qualificandum-ness limited by jar-ness.

This simply means that the thing jar has become the qualificandum of the cognition only insofar as it has jar-ness, and the brown color has become its qualifier only insofar as brown-ness *inheres* in it. This may be explained by means of diagram 2.

Diagram 2



The qualificandum-ness resident in the jar is determined by the qualifier-ness resident in the brown color. This is because the jar is the qualificandum *of* the qualifier, the brown color. The qualifier-ness resident in the brown color = the qualifier-ness limited by brown-ness and inherence. The qualificandum-ness resident in the jar = the qualificandum-ness limited by jar-ness. Hence the entire cognition is the cognition the qualifier-ness of which is limited by brown-ness and inherence and which determines the qualificandum-ness limited by jar-ness.

An important point to be noted here is that although the mode of cognition becomes the limitor, it is a limitor only of a relational property residing or located in the object referred to by the word. Any object becomes the qualificandum or the qualifier of a cognition only under some mode. This mode is the limitor of qualificandum-ness or qualifier-ness, but not of the qualificandum or of the qualifier. So, also, when an object is the cause of another object, the modes under which the cause and the effect are cognized become the limitors, not of the cause and the effect, but of the properties of being the cause (cause-ness) and the property of being the effect (effect-ness). Thus, generally, when any object, *a*, is related to another object, *b*, by a relation *R*, *a* has the property of being the first term of *R* and *b* the property of being the second term of *R*. The modes under which the objects *a* and *b* are cognized become the limitors of *these properties*. Thus we can never have a definiendum like 'xRy' but only something like: 'x cognized under the mode F is related to y cognized under the mode G by the relation *R*'. This explains the function of the limitor. In *aRb*, *a* has the property being the predecessor (predecessor-ness), and *b* the property of the successor-ness, of *R*. In *cRb*, *c* has predecessor-ness, and *b* the successor-ness, of *R*. How can one distinguish the predecessor-ness resident in *a* from the predecessor-ness resident in *c*, especially when *R* is the same in both cases? As concrete examples, we may have: this is a mango (this has mango-ness) and that is a mango (that has mango-ness), where *R* is inherence and *b* is the universal mango-ness, which is the same in both cases. The difference in the predecessor-nesses resident in *a* and *c* is due to the *limitors* of the two predecessor-nesses. In the first case, the predecessor-ness is limited by *a*-ness (this-ness), and in the second case it is limited by *c*-ness (that-ness). Thus the limitors differentiate between predecessor-nesses and successor-ness residing in different objects.

What is limited by the limitors may be of two kinds. The word *avacchinna* (limited, determined) is used not only for a relational abstract which is limited by the mode of cognition of the term related, but also for a "thing's nature which is determined" by the mode of cognition of the thing. "The nature determined" by the mode of cognition is "forma cum subjecto represented by the concrete concept of the thing"; the mode of cognition is "the forma sine subjecto represented by the abstract concept of the thing."[5] For example, water cognized as water, that is, under the mode of water-ness, is said to be

limited by water-ness. In 'absence of (a) jar' there is an ambiguity; the meaning may be 'absence of a particular jar' or 'absence of all jars'. This ambiguity is resolved by use of limitors in a different sense, which we shall explain presently. The point is that the sense of limitor as a mode of cognition does not show the quantity of what is cognized.

This sense of 'limitor' as the mode under which an object is cognized so that it can be related to another object does not give us any indication of the quantity of the relational cognition. Thus to say 'cognized under the mode of fire-ness', that is, 'limited by fire-ness' (*vahnitvā 'vacchinna*), does not give us any indication whether the object cognized is just one particular fire or all fires. Here an adjective of quantity like 'all' has to be added. Thus, for example, Jagadīśa writes "*vahnitvâvacchinnasya sarvasyaiva.*"[6] The addition of '*sarva*' ('all') here is lost in Guha's interpretation.[7] Viśvanātha also writes "*pratiyogitâ 'vacchedakâ 'vacchinnasya yasya kasyacit pratiyogino 'nâdhikaraṇatvaṁ, tatsāmānyasyā va. . . .*"[8] The question of the opponent which Viśvanātha is explaining here concerns the ambiguity of the expression 'counterpositive limited by the limitor of the counterpositiveness'. Does it mean just *some* such counterpositive entity—or all?[9]

Now there is a second sense of 'limitor', in which it is used to indicate quantity of cognition. There are two types of reasons, ontological and epistemic, for admitting limitors of relational properties over and above the relational properties themselves. It is only the epistemic reason which explains here how the concept of limitor is used to show quantification. In this respect, the Navya-Nyāya theory of limitors is fundamentally different from Buridan's theory of *ratio.* Now we explain the two types of reasons, ontological and epistemic, for admitting limitors of counterpositive-ness.[10] These reasons may be used *mutatis mutandis* in other cases of relational properties.

Ontological Reasons

The sentence or the proposition 'the chair is on the floor' is contradicted by 'the chair is not on the floor'. This relation of contradiction between the two propositions or sentences is, according to Navya-Nyāya, grounded in or based on a relation of incompatibility between two entities, the chair and the absence of the chair. According to Navya-Nyāya, a cognition of the form '*a* is not *b*', or '*a* is not in *b*', is a cognition of negation of *b* in *a*. Now to say that *b* is absent from *a* requires that we specify what it is for *b* to be present, certainly not in *a*, but in some other object, say *c*; unless it is specified what it is for *b* to be present, we cannot say what it is for *b* to be absent. Now to be present *b* has to be related by a specific relation to *c*. To say that *b* is not present in *a* will necessarily involve the relation in which *a* is present in *c*; *b* is not present in *a* in the way that it is present in *c*. This relation is the limiting relation of the counterpositive-ness resident in *b* and in determining the locus-ness resident in *a*. If we do not include this specific relation in which *b* is said to be present

in c in this case, then there cannot be any incompatibility between presence and absence of b and no contradiction between the corresponding propositions. For example, the two propositions 'the chair is on the floor' and 'the chair is not on the floor' will not be contradictory to each other if 'being on the floor' in the two propositions is understood differently. Even though the chair is in contact with the floor, still the chair will not be related to the floor by the relation in which the chair is related to its parts. The chair inheres in its parts but cannot inhere in the floor because the floor is not a part of the chair. So both the propositions 'the chair is on the floor' (by contact) and 'the chair is not on the floor' (say, by inherence) will both be true and hence not contradictory. Navya-Nyāya, therefore, postulates that whenever a cognition of negation is considered, it is necessary to take into consideration this specific relation by which the counterpositive is to be present somewhere.

The ontological reason for admitting a limiting property of the counterpositive-ness resident in the counterpositive of a negation is this: Consider the proposition 'there is a substance'. If we do not specify here the mode under which a substance is to be cognized, the two propositions 'there is a jar on the ground' and 'there is no chair on the ground' will not be contradictory even though both jars and chairs are substances. It may be suggested here that this difficulty may be avoided by stipulating that what is said to be present on the ground must be the the same as that which is said to be absent there. But this answer without bringing in the concept of the limiting property of counterpositive-ness—that is, the concept of the mode under which the counterpositive of a negation is cognized—is inadequate from the Nyāya point of view. This is because, in ontology, Navya-Nyāya accepts the principle that an entity qualified by some other entity is ontologically identical with the unqualified entity. For example, existence (*sattā*) inheres in three categories: substance, quality, and motion. Now this existence qualified by exclusion from quality and motion is ontologically the same as existence pure and simple. Yet existence qualified by exclusion from quality and motion is not present in quality and motion where existence is present. Thus quality and motion are the loci of both existence and absence of existence. This violates the rule of incompatibility between an object and its negation. The rule is that where the object is present it cannot be also absent, and vice versa. Existence which is not present in quality and motion is existence qualified by exclusion from quality and motion. But because the qualified existence is ontologically the same as unqualified existence, that is, existence pure and simple, existence and nonexistence cease to be incompatible. It is, therefore, necessary to introduce the concept of limitor of counterpositive-ness, which is the mode under which the counterpositive of a negation is cognized[11] and which is, therefore, an epistemic concept. Thus even though qualified and unqualified existence be ontologically identical, still, in cognition, they are cognized differently through different modes of cognition. Thus, in order to ensure the

relation of incompatibility between an object and its negation, the notion of the limiting property of counterpositive-ness is necessary.

Epistemological Reasons

According to Navya-Nyāya, a cognition of an object blocks or prevents the cognition of its absence under certain conditions. Now this blocking of one cognition by another is possible only when the limiting relation of counterpositive-ness resident in the counterpositive and the limiting property are essentially involved in the cognitions. Just as without these limitors there is no incompatibility between an object and its negation, so also without these limitors there will be no blocking of one cognition by another.

Now we explain how the concept of limitor is used in Navya-Nyāya to specify the quantity—universality or particularity—of cognitions. For this purpose the word 'limitor' is used in an altogether new sense. This sense is that the limiting property is coextensive with the relational property that is limited by it.[12] For example, in the negation of a jar, if the counterpositive-ness resident in the jar is limited by jar-ness than it will be the negation of jar-in-general or negation of all jars. But if the counterpositive-ness is limited by (this-jar)-ness, then the negation will be the negation of this jar, that is, negation of a particular jar. As the limiting property and the relational property that is limited by it are coextensive, wherever the limiting property is present the limited property also is present and vice versa. So also in other cases of the limitor—limitor of probans-ness or probandum-ness, or qualificandum-ness, qualifier-ness, and so on.

Using limitors to indicate the quantity of a cognized structure (according to Western logic, the proposition) differentiates the Indian logic of quantification from Western logic in a fundamental way. In Aristotelian logic, as also in modern symbolic logic, propositions or sentences are classified into four different *forms*—A, E, I, O—by quantity and quality. Universal propositions in Western logic are those which are quantified by the use of words like 'all', 'every', 'any', 'no', and so on. The quality, especially negative quality, is indicated by using words like 'no', 'not', or 'never', and so on. Now according to Navya-Nyāya, anything indicated by words occurring in a sentence will enter into its *content* and cannot belong *to* its *form*. That is why, according to Navya-Nyāya, the so-called quality of a proposition or a sentence which has to be indicated by the presence or absence of a negative particle cannot be a matter of form. So also if quantity in sentences is indicated by using words like 'all', 'some', and so on, then quantity will also be included in the content of the meaning of the sentences but cannot belong to their form. Accordingly, Navya-Nyāya, which deals with cognitions, rather than with propositions or sentences, sees a fundamental difference between the quantity and the quality of the content cognized. The quantity, like universality, particularity, cannot be expressed by any word occurring in a sentence which expresses the cogni-

tion, or rather the object of the cognition. Words occurring in such sentences refer to objects and are cognized as referents. But according to Navya-Nyāya, a word can refer to an object only if the object is presented under a specific mode, which must be a property belonging to the object and is the reason for the application of the word to the object. This mode of presentation, although meant by the word, is never its referent; it is the qualifier of the qualificative cognition which one has on hearing a word. The referent is the qualificandum of the qualificative cognition resulting from hearing the word, and the mode of presentation of the referent of the word is the qualifier. This mode, under which falls the referent of a word, is called the limitor of being referent of the word. Now this limitor is coextensive with the property of being referred to by the word. Whatever is referred to by the word has this property, and whatever has this property is a referent of the word. Thus, the concept of limiting property in the sense of a coextensive property of what is limited reveals or manifests the quantity of the structure cognized.

It is to be noted here that a limiting property or relation in this sense is not to be identified with what gets manifested in cognition. This is because even a property which is not a mode of a cognition can become a limitor in that cognition. A heavier property, even though it is manifested as a mode, cannot be a limitor if there is a lighter property coextensive with it. When a person hears a sentence uttered by a speaker, he, unlike the speaker himself, is not certain about the limitor. It is for this reason, that is, to avoid the uncertainty and vagueness in ordinary language where adjective of quantity is not used, that Navya-Nyāya has developed a technical language using 'limiting property', 'limiting relation', 'determiner', 'determined', and so on to make explicit that which was not explicit in the sentence. Thus, Navya-Nyāya language is not a metalanguage in the sense of being a language about another language, the object language. The technical language is a device to state explicitly what has been left unsaid in the ordinary sentence.

In Western logic, a universal sentence is analyzed into a propositional function containing at least one free variable, which becomes bound by the quantifier. The quantifier in such logics performs three different functions: binding, abstracting, and quantifying. The operation of binding a variable is merely to delete or cancel it from the expression. Thus we have the equivalence:

$$(\lambda x)Fx = F.$$

The binding of a variable thus results in abstraction in the sense that the propositional function yields a property. The third function, namely, that of quantifying a propositional function, is really to say something about the property. A universal quantifier says that the property is universal; an existential quantifier says that the property is satisfiable. Thus combinatory logic, which uses functions as arguments of functions, dispenses with the use of variables. Quantification, therefore, involves a higher level of thought.

In Navya-Nyāya, quantification is a matter of a way of cognizing objects. To cognize the object in one way, that is, where the limiting property is general, is to cognize the object universally. When the limiting property is a special property, the cognized structure is particular. We shall first explain here the meaning of 'all' and 'a' in Navya-Nyāya, and then show why universality and particularity cannot be indicated by these words.

Meaning of 'All'

'All' may be used as an adjective of the subject expression or of the predicate expression, which must be a count noun. "All objects are knowable," and "Time has all properties" are the examples of the respective cases.

The first case. The referent of 'all' is that which is without remainder. But this requires explanation of 'being without remainder'. The subject is cognized as having the predicate totally in such a case. This simply means that everything which is cognized under the mode of the subject term possesses the property referred to by the predicate term. (The predicate has to be distinguished from the predicate expression. The normal form of an expression of a cognition in Navya-Nyāya is *a* as *b*-possessing. The predicate expression is '*b*-possessing', but the predicate is *b*, not '*b*'. Thus the sentence 'Socrates is wise' has to be transformed into 'Socrates as wisdom-possessing' where the predicate expression is 'wisdom-possessing' but the predicate is wisdom.)

Gadādhara explains the meaning of 'all' as an adjective of the subject (the referent of a count noun) in the following way. According to him the referent of 'all' as an adjective of the subject is whatever is cognized under the mode of many-ness (a number), which pervades the mode of presentation of the referents of the subject term and is pervaded by the predicate. In the sentence 'all substances are knowable', the subject is substances and the mode of their presentation by the word 'substance' is substancehood. This means that all substances are the referents of the term 'substance' merely *as substances*, that is, as instances of the universal substancehood. The word 'all' here means whatever possesses such a number which pervades substancehood, which is the mode of presentation of the referents of the subject term. Substancehood is present in all individual substances; therefore the number or plurality may be present in more objects, that is, other than substances, but it must be present at least in all substances in order that the plurality be the pervader of substancehood. Now this plurality, which is a number, has to be pervaded by knowability, which is the predicate in the sentence. This means that every locus of this plurality must also be a locus of knowability. Thus, the sentence 'all substances are knowable' means that wherever there is substancehood there is knowability. (Gadādhara's interpretation of 'all' as an adjective of the subject term in terms of the relation of pervasion between three properties amounts really to transforming a universal sentence into a conditional one.

This is because of the Nyāya interpretation of pervasion as a relation which is not a *necessary* relation. To say that *a* pervades *b* is to say that whatever possesses *b*-ness possesses *a*-ness, not that whatever possesses *b*-ness *must* possess *a*-ness).

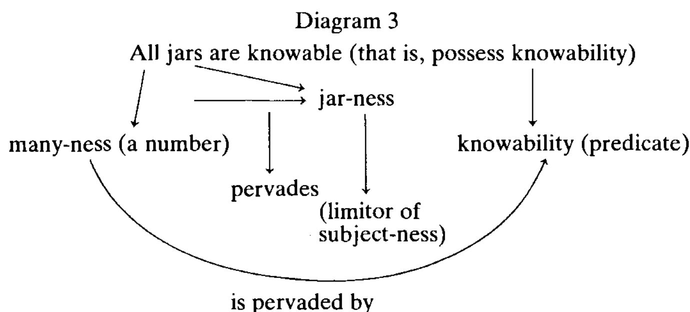
To say that all substances are knowable is not to say that there are no objects other than substances which do not have knowability. The use of 'all' does not preclude the possibility of the predicate belonging to things other than the referents of the subject term. What is precluded is that the predicate may not belong to all the referents of the subject term. This possibility is precluded by the stipulation that the plurality which is the mode of presentation of the referents of 'all' must be pervaded by the predicate.

If the condition, that the plurality or many-ness which is the mode of presentation of the referent of 'all', is not pervaded by the predicate, then the predicate will not be present in all objects which are the subject of the sentence. For example, we cannot say correctly that all jars are blue, for the plurality which qualifies jars is not pervaded by the color blue; wherever jarness is present, the plurality is present, but wherever this plurality is present, blue color is not present. So we can only say that some jars are blue.

If the condition, that the many-ness which is the mode of presentation of referents of 'all' be the pervader of the mode of presentation of the subject, is not given, then, too, the use of 'all' will be unjustified. In the sentence 'all jars possess blue color', the blue color is the predicate; if the many-ness is pervaded by this predicate, then wherever this many-ness is present, blue color will be present, and all and only blue jars will be the loci of this many-ness. But this cannot be the meaning of 'all jars are blue'. Hence the further condition, that the many-ness which is the mode of presentation of the referents of 'all' has to pervade the mode of presentation of the subject, is necessary.

We may represent this interpretation of 'all' in diagram 3.

Diagram 3



This means that wherever jar-ness is located the number is located, and wherever the number is located knowability is located.

It should be noted here that the referent of 'all' being defined in terms of

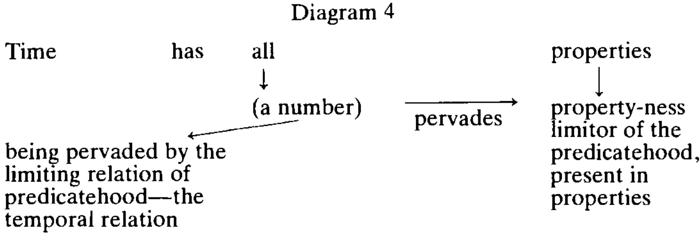
pervasion, pervasion itself cannot be explained in terms of 'all'. In Western logic, where the universal or the existential quantifier is regarded as basic, pervasion can be defined in terms of the universal quantifier thus:

Definition of pervasion: s pervades $h = (x)(xR_1h \supset xR_2s)$.

But according to Navya-Nyāya philosophers, it is in terms of the relation of pervasion by which the meaning of 'all' is to be defined.

The second case. In the case of 'all' being an adjective of the predicate expression, its referents will be whatever has plurality (many-ness), pervading the mode of the predicate and being pervaded by the relevant relation to the subject. In the sentence 'time possesses all properties', the predicate is *property*, and its mode is *being a property*. A property is something that *is in* another object. Being such a property is pervaded by the plurality belonging to all properties. This plurality is also present in all properties in which the mode of the predicate (being a property) is present; so the plurality pervades the mode of the predicate. Again, all properties are in time and hence are related to time. So all individual properties are such that the plurality (of all properties) is present in them, and *being a* property is also present in them, and *being related to time* is also present in them. Hence all the conditions of determining the referent of 'all' are satisfied in this case. Diagram 4 will make the meaning clear.

Diagram 4



Wherever property-ness is located (that is, whatever is a property) the number is located. Whatever the number is located in is *in time* (that is, is related to the substance which is time by the temporal relation). From this it follows that whatever is a property is in time. According to Gadādhara, this is the meaning of 'Time has all properties'.

Meaning of 'One'

If it is said that the meaning of 'one' is whatever possesses one-ness, then it will be quite proper to say that one man is present in the room when there are many others in the room. For each individual person will be one person, but according to Navya-Nyāya, this will be a false statement in this circumstance. In Sanskrit idiom, 'one' means 'one and only one'. The meaning of 'one' in

this sense is explained by Gadādhara in the following way. If 'one' is an adjective of the subject expression, then it refers to whatever possesses one-ness, which is not the counterpositive of difference present in the referent of the subject expression, which is qualified by the predicate. If there are two persons, A and B, in the room, then A has one-ness, but A as well as B is qualified by the predicate (being in the room), and A is different from B; the one-ness of A *is the counterpositive of* difference from B, who is also a referent of the subject expression "B" and is in the room. So we cannot say about A that one man is in the room.

So also in the case of 'one' as an adjective of the predicate expression. 'One' in such a sentence will refer to whatever has one-ness, which is not a counterpositive of difference present in the predicate, which is related to whatever has the predicate as its property. In the case of two-eyed persons, we cannot say that they have one eye, for the one-ness as qualifying the predicate, eyes, say, A and B, cannot be said to belong to A, or to B, alone. For such a one-ness in A is counterpositive of difference from B, which is the other eye, related to (belonging to) such persons.

It becomes clear now why Navya-Nyāya cannot use 'all' to indicate quantity of cognitions. For to understand the meaning of all, it is necessary to use the cognition of pervasion, which, therefore, cannot be indicated by 'all'. But the concept *pervasion* itself involves universality, so universality has to be understood independently of the use of 'all'. This, as has been explained above, is done by using the concept of limitor in the second sense.

V. USE OF LIMITORS IN THE NAVYA-NYĀYA DEFINITION OF PERVASION

Navya-Nyāya uses limiting properties and limiting relations almost constantly, especially in definitions. Limitors are mainly used for two purposes, both of which are connected with the notion of a mode of presentation of an object in a cognition. One such use is to explain why objects which are ontologically identical cannot be used interchangeably in a cognitive context like an inference. The other use is to determine the quantity, universality, or otherwise of the objects of cognition by their mode of presentation in cognition. I shall now explain these two uses of limitors by examining a definition of pervasion as given in Viśvanātha.[13]

Pervasion is such a relation between the pervader and the pervaded that the pervaded becomes an unfailing mark of the pervader. This is possible if and only if the pervaded (h) does not occur where the pervader (s) does not occur. This may be analyzed differently in terms of different types of negation admitted in Navya-Nyāya. The definition of pervasion that we shall discuss here is in terms of absence and difference. Initially it may be stated thus:

(1) Pervasion of h by s = the absence of h from what is different from a locus of s (the mark (h) must not occur where s does not occur).

This initial statement is then further analyzed as

(2) Pervasion of h by s = negation of occurrence of h determined by what possesses difference the counterpositive of which is a locus of s.

That this definition is correct is shown by applying it to an example. Smoke is pervaded by fire, invariably goes with fire, and is, therefore, an unfailing mark of fire. Now smoke does not occur where fire does not occur. The locus where fire does not occur is necessarily different from the locus where fire occurs.

S If x is different from y, then x has difference from y.

This is stated in Navya-Nyāya terminology as:

SN x has difference the counterpositive of which is y.

This is because of the definition:

DD1 x is different from y = y is counterpositive of difference resident in x; or, x has difference the counterpositive of which is y.

This definition of pervasion seems to be correct as it does not apply to the case which is not a case of pervasion. If someone infers that there is smoke, because there is fire, the smoke (s) becomes the pervader, and fire the pervaded (h). This is not a case of pervasion, for there is at least one instance where fire is present but smoke is not (say, a red-hot iron ball). The definition of pervasion, too, is not applicable to this wrong case.

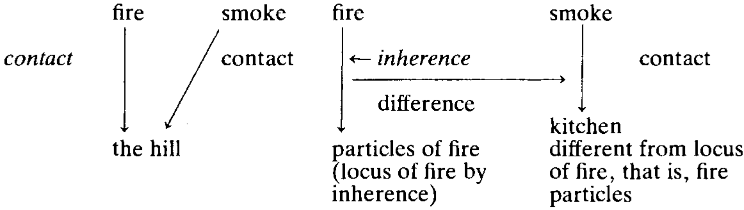
But the definition as it stands is not adequate. The first insertion here is that in understanding a locus of s in 'different from a locus of s' in (1), we have to take that relation which is the limiting relation of *s-ness* in the inference. Why this is necessary is explained as follows.

Smoke is really pervaded by fire; hence the definition of pervasion ought to apply to this case. But if the relation in which locus *of s* is to be taken is not specified, then the definition will fail to apply to this case and will be too narrow. Without this identification of the limiting relation of s-ness with the relation in which s is to be located in the locus, by 'locus of fire' we may understand its particles, for fire is located in its particles by inherence. The kitchen, for example, becomes different from this locus of s, but smoke is present there. Hence the definition of pervasion does not apply here.

The defect is remedied by the said identification of the two relations. When one infers fire on a hill, one infers that fire occurs on the hill in the relation of contact, not inherence. Hence, when one understands 'locus of fire', one must understand an object where fire occurs by the relation of contact. This may be explained by diagram 5.

Diagram 5

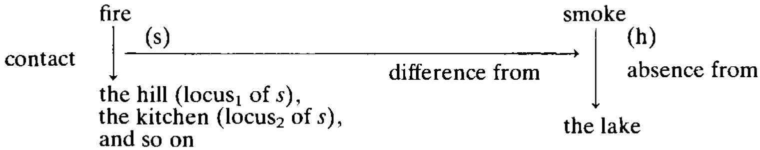
INFERENCE



The difficulty is therefore resolved by stipulating that the relation of fire to its locus must be identical in both the cases. Since in diagram 5 the two relations are not the same, this case does not show that the definition of pervasion is too narrow.

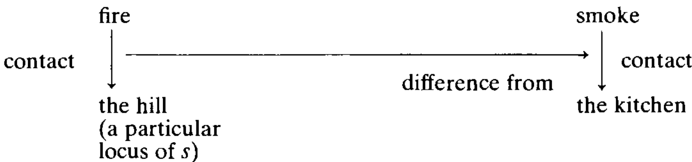
The next insertion is of a limiting property having the function of a universal quantifier. The *h* must not be present where *s* is not present. This means that *h* must not be present in *any* locus where *s* is absent. This again means that the *h* must not be present in a locus which is different from each and every locus of *s*. This point may be explained by diagram 6.

Diagram 6



This means, in the Navya-Nyāya terminology, that the counterpositive of difference must be *all loci* of *s*. This is achieved in Navya-Nyāya terminology by saying that the counterpositive-ness resident in the counterpositive must be limited by mere locus-ness of *s*; that is, the counterpositive of difference has to be cognized under the mode of *being just a locus of s*. The necessity of this insertion is proved negatively by showing what would follow if it is not made (diagram 7).

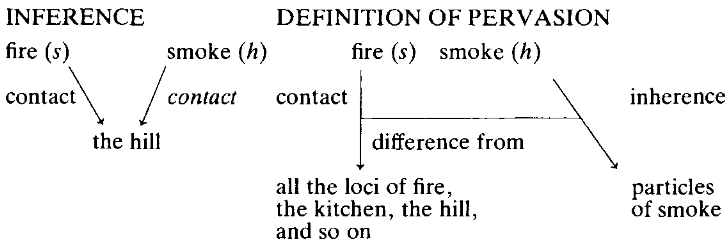
Diagram 7



Understanding by 'difference from a locus of *s*' the difference from a particular locus, say, the hill, we can take the kitchen as different from this particular locus of fire, where smoke is present. Thus the definition of pervasion without this insertion will fail to apply to the smoke-fire case, and will be too narrow. This insertion makes explicit what will count as different from a locus of *s*, what will be the counterpositive of the difference from a locus of *s*.

A third insertion is necessary to explain the sense in which the *h* must be present in a locus of absence of *s*. It is pointed out that the limiting relation of *h* in the inference must be the same as the limiting relation of counterpositiveness resident in *h*. This may be explained by diagram 8.

Diagram 8



In the inference in diagram 8, smoke on the hill has become the mark (*h*) of fire (*s*) by being in contact with the hill. But the attempt to show that the definition of pervasion is too narrow is based on taking a different relation, in which smoke is present in its particles, which are different from every locus of fire by contact. So all other conditions have been satisfied, but this new condition in which smoke is to be taken as being absent has not. Hence this attempt to show that the definition is too narrow does not succeed.

The final insertion in the definition shows that substitutivity of ontological identity does not hold in inference. The example given by Viśvanātha is based on the Navya-Nyāya theory of the ontological identity between a qualified object and the object as unqualified. Thus existence is a universal which inheres in the first three categories, namely, substance, quality, and motion. Yet existence *as* excluded from quality and motion inheres only in substance. In Navya-Nyāya terminology, existence qualified by exclusion from quality and motion inheres only in substance, but because existence so qualified and existence pure and simple are ontologically identical, a valid inference would become invalid if this identity is allowed. The inference is this:

Inference: This is a substance, for it possesses existence qualified by exclusion from quality and motion.

This valid inference will become invalid if, in place of qualified existence, we write existence pure and simple. To prevent this sort of substitution, Viśva-

nātha points out that ontological identity is not sufficient; what is necessary is to consider the mode under which the *h* is cognized. This may be explained by diagram 9, and the inference reconstructed in diagram 10.

Diagram 9

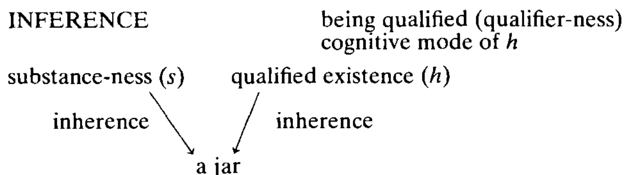
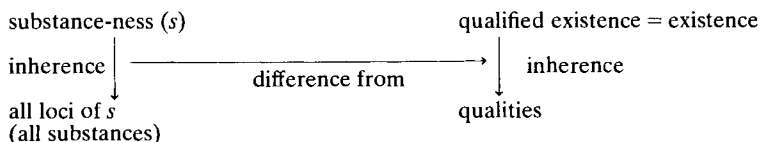


Diagram 10



In diagram 10 all the previous conditions have been fulfilled: (a) locus of *s* in the same relation as in the inference; (b) difference from every such locus of *s*; and (c) the relation in which *h* functions in the inference, which is the same relation, namely, inherence. Yet the *h*, qualified existence being ontologically identical with pure existence, inheres in what is different from every locus of *s*. Viśvanātha's suggested solution is that ontological identity is not sufficient to justify the substitution; the mode of cognition also has to be taken into consideration. In the present case, although qualified existence and pure existence are ontologically identical, they are cognized under different modes, in the inference as qualified, and in the substitution as pure, existence. Hence for substitution in any inference, what is necessary is the identity of modes of cognition, not ontological identity.

NOTES

1. Some of these works are listed in Karl H. Potter, *Bibliography of Indian Philosophy*, rev. ed., vol. 1 of *Encyclopedia of Indian Philosophies* (Princeton: Princeton University Press, 1984).
2. Jan Lukasiewicz, *Aristotle's Syllogistic from the Standpoint of Modern Formal Logic*, 2d ed., enl. (Oxford: Clarendon Press, 1957), pp. 2–3.
3. Findlay, J.N., *Meinong's Theory of Objects and Values*, 2d ed. (Oxford: Clarendon Press, 1963), p. 12.
4. P. Geach, "A Medieval Discussion of Intentionality," in *Logic, Methodology and Philosophy of Science*, ed. Yehoshua Bar-Hillel (New York: North-Holland, 1955), p. 425.

5. C. Goekoop, *The Logic of Invariable Concommitance in the Tattvacintamani* (Dordrecht: D. Reidel, 1967), p. 13.

6. *Siddhāntalakṣaṇa, Jāgadīśī*, p. 3. Dr. D. C. Guha has quoted this sentence of Jagadīśā but has missed the point, as he says that to say 'limited by fireness' is to mean 'each and every case of fire' (Dinesh Chanira Guha, *Navya Nyāya System of Logic: Basic Theories and Techniques*, 2d rev. ed. (Delhi: Motilal Banarsidass, 1979), p. 24).

7. For the necessity of this addition, see Vāmācarna Bhattacharyya, *Siddhāntalakṣaṇa* (Benares: Master Khelarilal & Sons, 1933), p. 4.

8. *Bhāṣāpariccheda*, pp. 352–353.

9. It is interesting to note that Buridan's theory of *ratio* as the mode or aspect of the referent "essentially involves quantifying over *rationes*" (p. 428). This shows that limitor in the sense of mode of cognition cannot do the work of quantifiers, and this is emphasized in the texts quoted.

10. Kalipada Tarkacharya, *Navya-Nyāya-Bhāṣā-Pradīpa* (Calcutta: Sanskrit College, 1973), pp. 33ff.

11. "*Yaś ca pratiyogī bhavati, tatra viśeṣaṇatayā pratīyamāno 'sādhāraṇo dharmaḥ tad-gata-pratiyogitāyā vacchedako bhavatīti phalitārthaḥ*" (*Navya-Nyāya Bhāṣā-Pradīpaḥ*, p. 34).

12. *Anyūnā 'natirikta-vṛtti-dharmasyaivâ-'vacchedakatvam NK.*, p. 84.

13. **Sādhyatā-'vacchedaka-sambandhâ-'vacchinna-sādhyavattā-'vacchinna-pratiyogitāka-bhedavan-nirūpita-hetutā-'vacchedaka-sambandhâ-'vacchinna-hetutā-'vacchedakâ-'vacchinna-vṛttitātvâ-'vacchinna-pratiyogitāka-vṛttitvâ'-'bhāvo vyāptiḥ* (P. Sastri, *Bhāṣāparicchedaḥ*, p. 333). Calcutta: Sanislarta Pustaka Bhandar, 1971.

The Nyāya on Double Negation

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The aim of this paper is to discuss the Nyāya theory of double negation in the light of the four types of negation mentioned in the classical theory of the Nyāya system. Since the Nyāya has discussed negation at the linguistic, epistemic, and ontological levels, the proper understanding of the Nyāya view would presuppose the Nyāya conception of cognition, relation, and meaning. Moreover, the Nyāya concept of negation is not identical with either the term-negation or the proposition-negation discussed in contemporary philosophy. The first section of this paper will deal with some of the basic concepts of the Nyāya, and the second section will deal with the sixteen types of double negation.

1 It is claimed by contemporary logicians that what is negated is a proposition or a proposition-like expression. Arthur Prior in his article on negation said:

> By the use of open sentences all the varieties of negation are reduced to the placing of "not" or "it is not the case that" before some proposition or proposition-like expression, the whole being either contained or not contained within some wider propositional context. This reduction assumes that with the basic singular form "x is an A" or "x ϕ's" there is no real distinction between the internal negation "x is not an A" (or "x is non-A") or "x does not ϕ" and the external negation "Not (x is an A)" or "Not (x ϕ's)". ([7], pp. 458–459)

From the above remarks it follows that all types of negation are reducible to the negation of a proposition or a propositional function. The distinction between an external and an internal negation is relevant in the context of a complex proposition. The negation of 'If *p*, then *q*' is not 'If *p*, then not-*q*', but 'Not (If *p*, then *q*)'. Similarly, if we apply Russell's theory of definite description, then in contexts like 'The present King of France is bald', the negation (i.e., the external negation) is not 'The present King of France is not bald', but 'It is not the

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case that the present King of France is bald'. But this distinction between an external and an internal negation does not suggest that the negation has been applied to different types of entities. The negation is applied to either a proposition or a proposition-like expression as Arthur Prior suggested. In this respect the Nyāya concept of negation is different from the contemporary concept of negation.

According to the Nyāya what is negated is the second term of a dyadic relation *as the second member of this relation.* The explanation of this concept would lead us to the Nyāya concept of cognition and relation.

The Nyāya has drawn a distinction between a qualificative cognition and a nonqualificative cognition.[1] A qualificative cognition can be expressed by a complex expression of the form '*aRb*', where '*a*' stands for the qualificand, '*b*' for the qualifier, and '*R*' for the qualification relation. Hence a qualificative cognition necessarily involves at least three elements at the epistemic level.[2] In a qualificative cognition an object is cognized under some mode of presentation, but in a nonqualificative cognition the ultimate elements of a qualificative cognition are cognized without any mode of presentation.

Let us consider the cognition of a table expressed by the expression 'a table'. In this cognition a particular table is the qualificand, the universal tableness is the qualifier, and the relation of tableness to a particular table is the qualification relation, which in this context is inherence. Since a table is the qualificand, it has the property of being the qualificand. This property of being the qualificand simply specifies the role of this object at the epistemic level. Similarly, the universal tableness which is the qualifier has the property of being the qualifier. The relation of inherence is neither a part of the qualificand, nor is it a part of the qualifier. It is a mode of presentation of the qualifier. That is to say, the universal tableness is cognized as the second member of the relation of inherence. In the technical language of the Nyāya it is described as "the limiting relation of the property of being the qualifier". In a more complex cognition expressed by the expression, say, 'a table is brown' or 'a brown table', the qualificand is a table and the qualifier is a particular brown color. The property of being the qualificand residing in a table which is the qualificand is limited by the universal tableness, and the property of being the qualifier residing in a brown color which is the qualifier is limited by the universal brownness. The relation of inherence which relates a brown color to a table is also a mode of presentation of the brown color. Hence this relation becomes the limiting relation of the property of being the qualifier. The property of being the qualificand is limited by a property alone, while the property of being the qualifier is limited by both a property and a relation.

This feature of the Nyāya can be compared to some extent with Frege's distinction between saturated and unsaturated parts of a thought. Frege claimed ([3], p. 54), ". . . not all parts of a thought can be complete; at least one must be 'unsaturated', or predicative; otherwise they would not hold together". The Nyāya also considers the qualifier as unsaturated in the sense that the relation is also a mode of presentation of the qualifier. Moreover, the Nyāya has given specific reasons for the inclusion of a relation within the mode of presentation of the qualifier.[3] However, from this comparison I do not intend to conclude that the Nyāya use of the term 'qualifier' is the same as Frege's use of the term

'concept'. What I am emphasizing is the unsaturatedness of a qualifier in the sense that it necessarily depends upon a relation.

From the above discussion it follows that any qualificative cognition can be described by the form '*aRb*', where '*a*' stands for the qualificand, '*b*' for the qualifier, and '*R*' for the qualification relation. When this description is expanded in the technical language of the Nyāya, it takes the following form:

The cognition in which the property of being the qualificand residing in *a* is limited by *a*-ness and determined by the property of being the qualifier residing in *b*, which is limited by both *b*-ness and *R*.[4]

The distinction between the relation *limited by* and the relation *determined by* can be explained in the following way:

(A) *x* is limited by *y* iff
- (i) both *x* and *y* are properties,
- (ii) *x* is a relational property, and
- (iii) the property *y* is a mode of presentation of the object where relation property *x* resides.

In this context it is to be noted that the expression 'mode of presentation' is used in such a way that it determines the referent(s) of a term. Moreover, the Nyāya use of the term 'property' is much broader than the ordinary use of it. A property, according to the Nyāya, has been defined in the following way:

x is a property iff $(\exists y)$ (*y* is a locus of *x*)

(B) *x* is determined by *y* iff both *x* and *y* are relational properties of correlatives.

In this context it is to be noted that the *determined by* relation is symmetrical. That is to say, if *x* is determined by *y*, then *y* is also determined by *x*. But the *limited by* relation is not symmetrical.

Now let us discuss the Nyāya conception of relation and the classification of relations which is the basis for drawing a distinction between the two types of negation. According to the Nyāya *R* is a relation if the following conditions are satisfied:

- (i) It is due to *R* that *x* appears as the qualificand and *y* appears as the qualifier of a cognition which is expressed by '*xRy*'.
- (ii) It is due to *R* that the referents of '*x*' and '*y*' are unified in such a way that '*xRy*' represents a fact in the world.

The former feature of a relation is epistemic and the latter one is ontological. At the level of fact, *x* is called 'the first term' ('*anuyogin*') and *y* is called 'the second term' ('*pratiyogin*') of *R*. At the epistemic level *x* is the qualificand and *y* is the qualifier of *R*.

According to the Nyāya all relations are dyadic, and all higher-order relations are reduced to a set of dyadic relations. All relations can be divided into two types depending upon whether the second term occurs in the first term or not. The relation in which the second term occurs in the first term is called 'occurrence-exacting relation'. The linguistic form '*y* is in *x*' or '*y* occurs in *x*'

represents this type of relation. If the second term does not occur in the first term, then the relation is called 'not occurrence-exacting'. Relations like conjunction and inherence are occurrence-exacting.[5] But relations like identity, pervasion, the property of being the content, the converse of the property of being the content are not occurrence-exacting. In this context another important aspect of the Nyāya concept of relation should be mentioned. In some context a term itself plays the role of a relation. This type of relation is a self-linking relation (*svarūpa-sambandha*). Relations like the relation of the property of being Socrates to its possessor, relation of the property of being the present President of the United States to its possessor are self-linking relations. Most of the relational abstracts, such as the property of being the substratum, are considered as self-linking relations. In addition to these types of self-linking relations there are spatial and temporal self-linking relations. The self-linking relation plays an important role in the context of a negation. When we say 'x has the absence of y', what we mean or understand is that the absence of y, which is a negative entity, is related to its locus x by an absential self-linking relation which is a special type of self-linking relation. That is to say, the relation of the absence of y to x is not a separate ontological entity. It is to be identified with at least one of the terms of a relation. According to most of the Nyāya philosophers it is to be identified with the first term of a relation (*anuyogin*).

Now let us formulate the criteria for forming a significant negative expression. If the following conditions are satisfied, expressions of the form 'not-t', or 'absence of t', or 'non-t' would be considered significant:

(i) If 't' is a meaningful expression or refers to an entity, then 'not-t' would be significant provided 't' does not refer to an absolutely universal property such that nothing lacks this property. According to the Nyāya properties like *nameability*, *knowability*, and *existence*, are considered universal properties in this sense.[6] Hence, expressions like 'nonexistence', 'nonnameability' and 'nonknowability' are not considered significant negative expressions.

(ii) If 'not-t' is significant, then 't' is not an empty term. Since terms like 'a hare's horn', 'Pegasus', and 'unicorn' are considered as empty, their negations would not be significant negative expressions. From this condition one should not conclude that any expression which contains an empty term is nonsignificant.[7] Instead of the sentence 'A hare's horn does not exist', the Nyāya prefers the sentence, 'There is an absence of a horn in a hare'.

(iii) The expression 'not-t' or 'negation of t' will be meaningful if we know what it is for t to be present somewhere. If we know what it is for t to be present somewhere, then we know the manner of presentation of t. Since t is the counterpositive (negatum) of the negation of t, t has the property of being the counterpositive. This property simply specifies the role of t in the context of a negation. The manner of presentation of t in the cognition *negation of t* is the limitor of the property of being the counterpositive residing in t. If the manner of presentation of t is a property, then the limitor is called a 'property-limitor', and if the manner of presentation is a relation in which t is cognized,

> then the relation is called a 'relation-limitor'. The relation in which *t* is present somewhere is called 'The limiting relation of the property of being the counterpositive residing in *t*'. The property of being the counterpositive is limited by a property (simple or complex) and a relation (simple or complex).[8]

At the epistemic level the cognition of not-*t* presupposes or depends upon the cognition of *t*. If a person has not cognized *t*, then he cannot cognize not-*t*. The cognition of *t* such that *t* is presented under some mode of presentation is considered as one of the causal conditions for the cognition of not-*t*. But the relation between the cognition of not-*t* in the locus *l* and the cognition of *t* in the same locus *l* is preventer-prevented, which is the analogue of the contradictory relation between two contradictory propositions.

When we discuss the validity and the invalidity of a cognition, or the truth and falsity of a proposition which expresses a cognition, we move from the epistemic level to the ontological level. If a cognition is valid, then all the elements of it are real, and the relation relates the second term with the first term. In the case of the valid cognition of *aRb*, the cognition as a mental entity is related to *a*, *b*, *R*, and the complex *aRb*. But in the case of an invalid cognition, the cognition is related to *a*, *b*, and *R*, but not to the complex *aRb*. Hence the content of an invalid cognition does not have the property of being the content of qualificand-qualifier complex (*viśiṣṭa-viṣayatā*), and the cognition does not have the converse of this relation. In other words, in a valid cognition the relation not only makes one of the terms a qualifier of another term which is the qualificand, but also relates the former to the latter at the level of fact. Since the second function of a relation is absent in an invalid cognition, it is said that the qualification relation is unreal. In this context it is to be noted that my use of the term 'unreal' in this context does not mean 'nonentity'. The qualification relation is an entity, but in the case of an invalid cognition it does not perform the second function of a relation. However, some Nyāya philosophers, for example, Vācaspati Miśra, have claimed this relation to be a nonentity (*asat*; cf. [13], p. 271). Now the question of the validity or invalidity of a cognition introduces the problem whether the negation of *t* (i.e., not-*t*) or *t* is present in a locus. According to the Nyāya if *t* occurs pervasively in its locus, then the negation of *t* cannot be present in the same locus, and conversely. But both *t* and the negation of *t* are real entities in the world. Hence the expressions '*t*' and 'not-*t*' are nonempty terms. If *t* does not occur pervasively in its locus, then the negation of *t* is also present in the same locus, and conversely. But this does not lead to a contradiction because *t* and not-*t* do not characterize the same portion of the locus at the same time. Here also both '*t*' and 'not-*t*' are nonempty terms.

Above we discussed the problem of negation at three different levels and how these levels are related to one another; now let us introduce the Nyāya classification of different types of negation.

Broadly speaking, there are two types of negation, viz., relational absence, and mutual absence or difference. The distinction between them can be drawn in terms of the limiting relation of the property of being the counterpositive which resides in the negatum. At the linguistic level these negations can be represented by the following forms:

(1) x is not in y or x does not occur in y, or not-x is in y.
(2) x is not y, or x is different from y.

(1) represents relational absence and (2) represents mutual absence. In (1) not-x occurs in the locus y, and x is the counterpositive of not-x. The property of being the counterpositive residing in x (i.e., the role of x) is limited by both x-ness and an occurrence-exacting relation. In other words, both x-ness and an occurrence-exacting relation are modes of presentation of x. Here x-ness is the property-limitor and an occurrence-exacting relation is the relation-limitor. In (2) y is the counterpositive, i.e. the negatum, and the property of being the counterpositive residing in y is limited by both y-ness and the relation of identity. So the relation of identity is the limiting relation of the property of being the counterpositive.

Most of the Nyāya philosophers have accepted three types of relational absence:

(1) The relational absence of an object before its production is the not-yet type of absence (*Prāgabhāva*). The absence of a jar before its production is present in its parts.[9] The cognition of this absence can be expressed by the sentence 'A jar will be produced in these parts'. When the jar is produced, the not-yet type of absence does not exist in its part. Since it cannot exist anywhere else, it ceases to exist. This type of absence has no beginning, but has an end. Since we are not asserting the absence of all jars, but the absence of the jar which will be produced, the property of being the counterpositive is limited not by a generic property like jarness, but by a specific property like a particular blue color *and* jarness.[10] As regards the limiting relation of the property of being the counterpositive, there is some difference of opinion among the Nyāya philosophers. It is claimed that since the jar has not yet been produced, the property of being the counterpositive is not limited by any relation. But the old Nyāya has accepted a temporal relation as the limiting relation of the property of being the counterpositive. If the absence of the jar is in its parts at t_n and the jar is produced in the parts at t_{n+1}, then obviously the jar is related to its parts by the relation of posterior existence. This temporal relation of posterior existence is considered as the limiting relation of the property of being the counterpositive. But the followers of the Navya-Nyāya do not subscribe to this view.

(2) The relational absence of an object after its destruction is the no-more type of absence (*dhvaṃsa*). The absence of a particular jar when it is destroyed is present in its parts. Since the destruction of a particular jar does not imply the destruction of all jars, the property of being the counterpositive is limited, not by a generic property, but by a specific property of the jar which has been destroyed. As regards the limiting relation, here also there is difference of opinion among the Nyāya philosophers. The followers of the Navya-Nyāya do not accept any limiting relation, while the followers of the old Nyāya have accepted a temporal relation as the limiting relation. If the destruction of a particular jar is the separation of its parts, then the whole jar ceases to

exist at time, say, t_n, when it is destroyed. If 'ceases to exist at time t_n' is explained as 'existent at time t_{n-1}', then the parts are related to the jar by the relation of previous existence.[11] For this reason it is claimed that the property of being the counterpositive is limited by the temporal relation of previous existence. Apart from this temporal relation the property of being the counterpositive is not limited by any other relation. A no-more type of absence has a beginning, but no end.

(3) The third type of relational absence is the never type of absence (*atyantābhāva*), for example, the absence of color in air, or the absence of a jar on the ground. Some of the followers of the old Nyāya do not consider the absence of a jar on the ground as a case of never type of absence. Since a never type of absence has neither a beginning nor an end, and since the absence of a jar on the ground has both a beginning and an end, these philosophers think that there is a need to accept a fourth type of relational absence. But the followers of the Navya-Nyāya as well as some of the followers of the old Nyāya think that the acceptance of the fourth type of relational absence would lead to the postulation of innumerable absences of a jar on the same ground. Each time the jar is removed, a new absence is created, and each time the jar is brought back, the previous absence is destroyed. In order to avoid this consequence, it is claimed that what ceases to exist when the jar is brought back is not the absence of it, but the relation of this absence to the ground. An absence is related to its locus by a self-linking relation which is to be identified ontologically with its locus. Now the followers of the Navya-Nyāya are of the opinion that this self-linking relation in the case of the absence of a jar on the ground is to be identified not with the ground as such, but with the ground when a jar is not present. Since this self-linking relation ceases to exist when a jar is brought on the ground which had an absence of a jar, we cannot perceive this absence when a jar is present on the same ground. So on the ground of parsimony these philosophers have included such examples under the third type of relational absence.

The property of being the counterpositive of a never type of absence is limited by both a property-limitor and a relation-limitor. But the limiting relation is an occurrence-exacting one.[12]

2 Now let us discuss whether the law of double negation holds good for the Nyāya philosophy. Since there are four types of negation according to the classical view of the Nyāya, there would be sixteen types of double negation. The aim of this paper is to discuss: (i) whether each of the sixteen double negations is identical with something or not, (ii) if it is identical with something, whether it is a positive or a negative entity, and (iii) if it is identical with a positive entity, whether it is the same as the negatum of the first negation. Let us use the symbol '$\sim$' for a never type of absence, the symbol '$\neg$' for a not-yet type of absence, the symbol '$\lrcorner$' for a no-more type of absence, and the symbol '$-$' for a mutual absence.

(1) $\sim\sim x$.

It is claimed by Gaṅgeśa and many other Nyāya philosophers that a never type of absence of a never type of absence of x is identical with x. The arguments in favor of this view are mainly epistemological. It is claimed that whenever we perceive the presence of an object, say a pot, we do not perceive the absence of it in the same locus and vice versa. The perceptual cognition of one will be prevented by the perceptual cognition of the other. Hence a never type of absence of a never type of absence of x is identical with x, i.e., with the counterpositive.

Raghunātha, a follower of the Navya-Nyāya school, does not subscribe to this view. He claimed that as we accept a negative entity in order to establish the truth of the proposition 'There is an absence of a pot on the ground', so we accept a negative entity in order to establish the truth of the proposition 'There is an absence of an absence of a pot on the ground'. Moreover, he claimed that all absences have something in common and this common property distinguishes absences from all other positive entities. The property of being an absence (*abhāvatva*), which is a common character of all absences, is an unanalyzable imposed property and it is to be distinguished from other class-characters such as horseness or cowness. In this context it is to be noted that any property other than a class-character (*jāti*) such as horseness is called 'an imposed property' ('*upādhi*'). Hence, a never type of absence of a never type of absence of x is not identical with x. Now the question is whether a third or a fourth never type of absence is also a separate absence or not. On this point Raghunātha claimed that a third never type of absence is identical with the first never type of absence and the fourth never type of absence is identical with the second never type of absence. So the law of double negation is valid in the following cases:

(a) $\sim\sim\sim x = \sim x$
(b) $\sim\sim\sim\sim x = \sim\sim x$.

The general rule may be stated in the following way:

> If n never types of absence precede x, then $\sim x$ is identical with it provided n is an odd number of never types of absence; and if n is an even number of never types of absence, then it is identical with $\sim\sim x$.

Pakṣadhara Miśra, a follower of the Nyāya school, considers a never type of absence of a never type of absence of x as identical with the limiting relation of the property of being the counterpositive.

Let us consider the proposition 'There is a pot on the ground by the relation of conjunction'. If this proposition is true, then there is a pot on the ground by the relation of conjunction. The never type of absence of a never type of absence of this pot by the relation of conjunction is identical with the conjunction relation which is a particular quality of both the pot and the ground according to the ontology of the Nyāya school. But Raghunātha has raised an objection against this view on the ground that if an absence of an absence of a pot by the relation of conjunction is identical with the conjunction relation, then the cognition of an absence of a pot and the cognition of an absence of an absence of a pot cannot be related by preventer-prevented relation. If we accept the view of Pakṣadhara Miśra, then the cognition of an absence of an absence of a pot being identical with the cognition of conjunction relation cannot be pre-

vented by the cognition of an absence of a pot. Since the view of Pakṣadhara Miśra violates the law of contradiction at the epistemic level, it is to be rejected on this ground. Hence ${\sim}{\sim}x$ cannot be identical with any relation.

There is another view which might be considered as a mean between the first and the second view. The first one identifies ${\sim}{\sim}x$ with x. The second one does not identify ${\sim}{\sim}x$ with x; rather it considers ${\sim}{\sim}x$ as a separate entity. The fourth view claims that the referent of 'x' is identical with the referent of '${\sim}{\sim}x$', but they are different with respect to sense or the mode of presentation. In the former case, the x is presented under the mode of x-ness, while in the latter case the same x is presented under the mode of the property of being ${\sim}{\sim}x$. Let us consider the absence of a pot on the ground. The counterpositive of this absence is the pot which is presented under the mode of potness. That is to say, the property of being the counterpositive resident in a pot is limited by the property *potness*. Now the question is what would be the counterpositive of ${\sim}{\sim}{\sim}x$. If ${\sim}{\sim}x$ is identical with x, then the counterpositive of it $({\sim}{\sim}{\sim}x)$ is x. If it were so, then what would be the difference between ${\sim}x$ and ${\sim}{\sim}{\sim}x$? This view claims that the counterpositive of ${\sim}{\sim}{\sim}x$ is x, but it is presented under the mode of the property of being ${\sim}{\sim}x$. So both 'x' and '${\sim}{\sim}x$' refer to the same object but under different modes of presentation. If the limiting relation of the property of being the counterpositive residing in the counterpositive of ${\sim}x$ is different from the limiting relation of the property of being the counterpositive residing in the counterpositive of ${\sim}{\sim}{\sim}x$, then also both 'x' and '${\sim}{\sim}x$' refer to the same thing, but under the mode of different relation-limitors.

(2) $\neg{\sim}x$.

Now let us discuss whether a not-yet type of absence of a never type of absence of x is identical with any entity. Since the negatum of a not-yet type of absence is a future object and since a never type of absence is not a future object, but an eternal entity, this type of double negation does not represent any entity, positive or negative. Let us consider the absence of color in air by the relation of inherence. Since air has no color, this type of absence is an example of a never type of absence. A not-yet type of absence of a never type of absence of color would not represent any entity. Hence $\neg{\sim}x$ would not be identical with anything.

(3) $\lrcorner{\sim}x$.

Similarly, a no-more type of absence of a never type of absence of x would not be identical with anything. Since the negatum of a no-more type of absence is a past object which no longer exists, and since a never type of absence cannot be destroyed, a no-more type of absence of a never type of absence cannot represent either a positive or a negative entity. Hence '$\lrcorner{\sim}x$' does not represent anything.

(4) $-{\sim}x$.

A mutual absence of a never type of absence of x is not identical with x. Consider the never type of absence of color in air. This absence qualifies the air, or in other words, it is a property of the air. The mutual absence of the never type of absence of color is in all objects other than the never type of absence

of a color. This absence qualifies the air, and the color along with many other objects except the never type of absence of color. Hence $\sim -x$ is never identical with x.

(5) $--x$.

Now let us discuss whether a mutual absence of a mutual absence of x is identical with x. According to the old Nyāya it is not identical with x or with any other entity. Consider the proposition 'A is different form B'. In this case the property called 'difference from B' becomes a property of A. The property *difference from B* is itself different from everything else. So the property *difference from difference from B* is a property of everything other than *difference from B*. If it were so, then $--B$ is not identical with B. As a matter of fact $--B$ becomes a property of B also. The same type of argument is applicable to all higher-order mutual absences. A higher-order mutual absence cannot be identical with a lower-order mutual absence.

In order to avoid this regress of mutual absences, Raghunātha claimed that a mutual absence of a generic mutual absence should be identified with the property of being a positive entity (*bhāvatva*) and the property of being a relational absence. In this context the difference between a generic mutual absence and a specific mutual absence is to be noted. If 'α' ranges over all objects other than mutual absences, then '$-\alpha$' represents a generic mutual absence. But expressions like 'the mutual absence of a pot' or 'the mutual absence of a cloth' represent specific mutual absences. According to the Nyāya all positive entities have something in common which is called 'the property of being a positive entity' (*bhāvatva*). Similarly, all relational absences have something in common which is called 'the property of being a relational absence' ('*saṃsargābhāvatva*'). In the Nyāya ontology the objects which are different from mutual absences are of two types, viz., positive entities and relational absences. Hence, the property represented by the expression 'a mutual absence of a generic mutual absence', i.e., '$--\alpha$', is present in all positive objects and relation absences. For this reason Raghunātha identified this property with the property of being a positive entity (i.e., positivity) and the property of being a relational absence. But the mutual absence of a specific mutual absence is to be identified with the property of being positive entity, the property of being a relational absence and the property of being a mutual absence of other specific objects. Consider a universe of discourse where 'a' represents a positive object, 'b' represents a relational absence, but 'c' and 'd' represent two different mutual absences. Now the mutual absence of c, i.e., difference from c, is a property which is to be identified with the property of being a, the property of being b, and the property of being d. On the ground of simplicity, Raghunātha wants to justify this thesis as opposed to the thesis that there are innumerable mutual absences.

(6) $\sim -x$.

Now the question is whether a never type of absence of a mutual absence of x is identical with x or with something else. Some followers of the old Nyāya have identified $\sim -x$ with x. That is to say, just as a never type of absence of a never type of absence of x is identical with x, so a never type of absence of a mutual absence of x is identical with x.

Two objections have been raised against this view:

(i) If we identify $\sim -x$ with x, then we cannot apprehend x as the locus of $\sim -x$ when we say "x has a never type of absence of a mutual absence of x". Since we do apprehend x as the locus of $\sim -x$, they cannot be identical with each other.

(ii) Secondly, this view goes against the law of parsimony in the following way. Consider a never type of absence of a mutual absence of a pot. If this absence is identical with a pot, then we have to admit innumerable never type of mutual absences of a pot as there are innumerable pots. For these reasons Gaṅgeśa and many other Nyāya philosophers have identified $\sim -x$ with x-ness. Let us explain this identification with an example. Consider the property of *difference from a pot*. This property is present in all things other than a pot, but the property of *the never type of absence of difference from a pot* is present in all pots only. According to the Nyāya, since potness occurs in all and only pot-individuals the property $\sim -pot$ is to be identified with potness. On the ground of simplicity also this identification can be justified.

But if we claim that a never type of absence of a never type of absence of x is identical with x, then $\sim -x = x$-ness ceases to be a universally valid law. This can be proved in the following way (cf. [4]):

(a) $\sim \sim x = x$
(b) $\sim \sim -x = -x$ [(b) follows from (a) by the rule of substitution]
(c) The counterpositive of $\sim \sim -x$ = the counterpositive of $-x$ [(c) follows from (b)]
(d) The counterpositive of $\sim \sim -x = \sim -x$, and the counterpositive of $-x = x$ [from the Nyāya view of negation]
(e) Therefore $\sim -x = x$ [from (c) and (d)]

Some Nyāya philosophers including Mathurānātha are of the opinion that $\sim -x$ has a dual nature. In some context $\sim -x$ is identical with x, and in some other context $\sim -x$ is identical with x-ness. Now if we accept this view of some Nyāya philosophers, then we cannot accept Leibniz' principle of the identity of indiscernibles as a universally valid law of identity.

On this point the view of Raghunātha seems to be superior to the views of other Nyāya philosophers. According to him, just as a never type of absence of a never type of absence of x is not identical with any positive entity, similarly a never type of absence of a mutual absence of x is not identical with any positive entity. Since all absences have something in common, a never type of absence of a mutual absence of x is a separate negative entity. A higher-order absence might be identified with a lower-order absence, but an absence cannot be identified with a positive entity. Hence, a never type of absence of difference from x cannot be identified either with x or with x-ness.

Moreover, the Nyāya conclusion that the property $\sim -x$ is identical with x-ness does not follow from the premise that $\sim -x$ and x-ness have the same locus. In some other contexts the Nyāya philosophers have not identified two properties of this type. Cowness belongs to all and only cows. The property of

being an animal with a dewlap also belongs to all and only cows. But the latter has not been identified with the former. The latter is considered as an analyzable imposed property, while the former is considered as a class-character which is an unanalyzable property. If we follow the view of Raghunātha, then we can consider the property *the never type of absence of difference from a cow* as an analyzable imposed property of all and only cows. This property is analogous to the property of being an animal with a dewlap. The latter is a positive entity, while the former is a negative entity, but both of them are complex properties.

(7) $\lrcorner - x$.

Now the question is whether anything corresponds to a no-more type of absence of a mutual absence of x. Since a mutual absence is considered as eternal, i.e. having no beginning and end, a no-more type of absence of a mutual absence is not an entity. Hence the linguistic expression 'a no-more type of absence of a mutual absence of x' is an empty-term.

(8) $\neg - x$.

Similarly, a not-yet type of absence of a mutual absence of x does not correspond to an entity. Since a mutual absence is eternal, there cannot be a not-yet type of absence of it.

In this context, it is to be noted that some of the Nyāya philosophers such as Śivāditya Miśra do not accept the eternality of a mutual absence. They think that a mutual absence of a pot is also destroyed when a pot is destroyed. Similarly, they would admit a not-yet type of absence of a mutual absence of a pot when a pot is not yet produced. But most of the Nyāya philosophers do not subscribe to this view. If we admit this view, then the destruction of a pot would also lead to the destruction of the mutual absence of the same pot. But we can truly say that a piece of cloth is different from that pot. If the *difference from a pot* is also destroyed due to the destruction of the pot, then we cannot find a fact which will correspond to the proposition 'this piece of cloth is different from that pot'. Similarly, before the production of a pot it can be said truly that a piece of cloth is different from a pot which will be produced. Since the past, present, and future objects are real, according to the Nyāya view, their differences are also real. Hence the propositions about these differences have truth values. For this reason the followers of the Navya-Nyāya do not subscribe to the view of Śivāditya Miśra. According to them both a never type of absence and a mutual absence of x are eternal entities.

(9) $\neg\neg x$.

Now let us discuss whether a not-yet type of absence of a not-yet type of absence of x is possible. According to the Nyāya a not-yet type of absence of a pot resides in the material cause of a pot. If we admit a not-yet type of absence of a not-yet type of absence of a pot, then it must be locatable either in the material cause of the pot or in the pot, or anywhere else. If it is locatable in the material cause of a pot, then it will have a contradictory property. Since there is no contradiction in reality, it is not possible. It cannot be identified with a pot, as there is no such pot when there is a not-yet type of absence of a pot. A not-yet type of absence has no beginning. If it were so, then its not-yet type of absence

would not be possible. So the acceptance of $\neg\neg x$ will destroy the very nature of a not-yet type of absence.

(10) $\sim\neg x$.

A never type of absence of a not-yet type of absence of x, according to the Nyāya, is not identical with x. It is considered as a separate entity. Let us explain with an example. A not-yet type of absence of a pot is present in the material cause of it. A never type of absence of this absence characterizes all other objects. When a pot is produced this never type absence, being an eternal entity, is not destroyed. it still characterizes those objects. If it is identified with a pot, then it ceases to be a never type of absence because a pot is not eternal. Hence, $\sim\neg x$ is not identical with x.

(11) $-\neg x$.

Similarly, a mutual absence of a not-yet absence of x is not identical with x. It is a separate ontological entity, and characterizes all objects which are different from the not-yet type of absence of x. The not-yet type of absence of a pot is present in its parts which are material causes of a pot. The mutual absence of it, viz., the property *difference from this absence*, is a character of all other objects including the pot which will be produced and its parts. Hence, $-\neg x$ is not identical with x.

(12) $\lrcorner\neg x$.

Now let us discuss whether a no-more type of absence of a not-yet type of absence of x is identical with x. According to the classical view, it is identical with x. Let us consider the not-yet type of absence of a pot before the production of a pot. When the pot is produced this not-yet type of absence is destroyed. Hence, it is identical with the pot. Before the production of a pot, the not-yet type of absence of a pot was the character of the parts of a pot. When a pot is produced, the pot becomes a property of its parts. So a pot is nothing but a destruction of the not-yet type of absence of a pot.

But Raghunātha, a follower of the Navya-Nyāya, does not subscribe to this view. According to him it is a separate negative entity. When a pot is present in its parts we can apprehend the destruction of the not-yet type of absence in the same locus. If a pot is identical with the destruction of the not-yet type of absence of it, then it is not possible. Hence, it is claimed that $\lrcorner\neg x$ is a separate negative entity and not identical with x.

(13) $\lrcorner\lrcorner x$.

A no-more type of absence of a no-more type of absence of x does not correspond to an entity. This follows from the very nature of a no-more type of absence. Since a no-more type of absence is endless or never ceases to exist, its destruction is not possible. Hence, the expression for it would not represent any real object. Hence, '$\lrcorner\lrcorner x$' does not represent an entity.

(14) $\neg\lrcorner x$.

With respect to a not-yet type of absence of the no-more type of absence of x, there is some difference of opinion between the old Nyāya and Raghunātha. According to the old Nyāya it is identical with x. Let us consider the destruction or the no-more type of absence of a pot. Before the destruction of a pot there is the not-yet type of absence of it (destruction of a pot). This not-yet type of absence is the pot itself. Hence $\neg \dashv x$ is identical with x. Here also Raghunātha claimed that we can apprehend the not-yet type of absence of the destruction of a pot when a pot is present in its parts. If it is identical with a positive entity, then this type of apprehension of a negative entity is not possible. Hence a not-yet type of absence of a no-more type of absence of x is a separate negative entity.

(15) $\sim \dashv x$.

A never type of absence of a no-more type of absence of x is not identical with x. A never type of absence is an eternal entity, but things like a pot or a cloth are non-eternal entities. Hence, it cannot be identified with a non-eternal entity. The no-more type of absence of a pot is present in the parts of a pot when it is destroyed. The never type of absence of this absence characterizes all other objects including the parts of a pot. Hence, $\sim \dashv x$ is not identical with x.

(16) $- \dashv x$.

Similarly, a mutual absence of a no-more type of absence of x is not identical with x. Since a mutual absence is an eternal entity and things like a pot or a piece of cloth are noneternal entities, a mutual absence cannot be identified with a noneternal object. When a pot is destroyed, a new object comes into being which has no end. The property *destruction of a pot* characterizes the parts of a pot, but the property *difference from this destruction* is present in all other objects including the parts of the pot. Hence, it is to be accepted as a separate negative entity which characterizes the things which are different from the destruction of a pot. For this reason $- \dashv x$ is not identical with x.[13]

From the above discussion of double negation it follows that some of the Nyāya philosophers, especially the followers of the old Nyāya, are trying to identify double negation of a positive entity with the positive entity itself or with a property which is a positive entity, but most of the followers of the Navya-Nyāya want to identify it with a negative entity. Following the suggestions of some Nyāya philosophers, it may be said that in most cases the double negation of x is not a separate ontological entity. It is another mode of presentation of x. As in the case of the never type of absence of a never type of absence of x, both the expressions '$\sim \sim x$' and 'x' refer to the same entity under different modes of presentation, so in cases like the not-yet type of absence of the no-more type of absence of x, and the no-more type of absence of the not-yet type of absence of x, the same entity is referred to under different modes of presentation. This technique may be utilized wherever double negation can be explained without postulating a separate negative entity. This view will cut across the two other extreme theses found in the Nyāya literature. However, from this remark one should not conclude that all cases of double negation can be explained in this way.

NOTES

1. In this context the term 'cognition' is used to talk about the content of cognition, not the act of cognizing.
2. At the ontological level these elements need not be separate or distinct elements.
3. A discussion of this point requires a separate paper.
4. In this context I have not introduced the Nyāya distinction between a sentence which gives rise to a cognition and a sentence which describes this cognition. The latter is essentially richer than the former. This distinction has been discussed in [12].
5. There are a few conjunctions which are not occurrence-exacting relations.
6. For a discussion on this topic, see [10].
7. For a discussion on empty terms, see [9], [11].
8. According to some Nyāya philosophers, the property of being the counterpositive of a not-yet or no-more type of negation is not limited by a relation-limitor.
9. This law does not hold good with respect to the not-yet type of absence of a no-more type of absence.
10. According to the old Nyāya the property of being the counterpositive is limited by a generic property.
11. Jagadīśa says *"Prāgabhāva-dhvaṃsayorapi uttarapūrvakālāveva,"* quoted in Madhusūdana Nyāyācārya (1976).
12. But a section of the Nyāya philosophers do not subscribe to the thesis that a not occurrence-exacting relation other than identity cannot be the limiting relation of the property of being the counterpositive. Gadāhara in his *Vyutpattivāda* says, *Vṛtti-aniyāmaka-sambandhasya-abhāva-pratiyogitā-avacchedakatve-ko-doṣaḥ*, quoted in Kalipada Tarkāchārya (1973). For a discussion see [11].
13. In this section I have included some of the discussion from *The Padārthatattva Nirūpaṇaṃ*, translated and elaborated by Pandit Madhusūdana Nyāyācārya, and *Navya-Nyāya-Bhāṣāpradīpaḥ*, edited with commentary by Pandit Kalipada Tarkāchārya. I am also indebted to Pandit Visvabandhu Bhattacharya. However, the faults are mine.

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THE MIDDLE TERM

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Syllogism is traditionally conceived as a form of mediate inference. The distinction between mediate and immediate inference is usually stated thus: "For the most part a new judgement is only got by putting together two judgements, and as it were extracting what they yield. But there are a few conclusions which we appear to draw *not* from any 'putting together' of two judgements, but simply from the relation to one another of the terms in one judgement. This is called *immediate* inference . . . " (Joseph [1], p. 232). According to Joseph, therefore, a syllogism to be a form of mediate inference has to fulfil two conditions: (a) there must be two judgements functioning as premises, and (b) the two premises must be 'put together' in order to yield the conclusion. We shall attempt here to examine the nature of 'putting together' of the two premises in syllogistic inference.

It is often contended that this 'putting together' of the premises is nothing but their conjunction. To say that the conclusion of a syllogism follows neither from the major premise alone, nor from the minor premise alone, but from the both 'put together' is simply to say that it follows from their conjunction. This is also necessary to explain why mediate inferences in general and syllogisms in particular ought to be regarded as logically valid implications with the conjunction of the premises as the antecedent and the conclusion as the consequent.

Against this theory we shall try to show that the conjunction of the premises cannot be regarded as explaining what it is to 'put them together', for this theory fails to bring out an essential feature of the middle term whether syllogism is considered as an inference or as an implication. To explain our point we shall examine how we can get an instance of a syllogism from its *form*. Consider, for example, the form Barbara which is often stated as the logical law of the transitivity of class inclusion:

(B) $$(b)(c)(a)(a \subset b . c \subset a . \supset . c \subset b)$$

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where 'a', 'b' and 'c' are class-variables. Now to get a concrete example of a syllogism of the form (B), it is usually thought necessary to have specific class-terms for the variables. This may be done in the following way:

Syl 1.

(1) $(c)(a)(a\subset M.c\subset a.\supset c\subset M)$ (B), U.I.

(2) $(a)(a\subset M.K\subset a.\supset K\subset M)$ 1, U.I.

(3) $H\subset M.K\subset H.\supset K\subset M$ 2, U.I.

where 'H', 'M' and 'K' are abbreviations of 'the class of men', 'the class of mortals' and 'the class of kings'.

Now Syl 1 (3) can be regarded as a concrete example of Barbara, if we regard a syllogism as an implication. If, however, we want to *infer* 'all kings are mortal' ('K⊂M'), then we have to affirm the antecedent of Syl 1 (3) which is a conjunction. This we can do if we take this conjunction as a premise, thus:

(4) $H\subset M.K\subset H$ premise

(5) $K\subset M$ 3,4 modus ponens.

Now we shall show that it is not necessary to specify the middle term in order to have an example of a syllogism.

Syl 2.

(1) the same as (1) of Syl 1.

(2) the same as (2) of Syl 1.

(3) $(\exists a)(a\subset M.K\subset a)\supset(K\subset M)$ 2, by rules of quantification.

Syl 2 (3) in our opinion should be regarded as a concrete example of a syllogism of the form (B). If we now want to infer Syl 1 (5), then we have to assert

(4) $(\exists a)(a\subset M.K\subset a)$

which in our opinion should be the premise of the syllogism and not Syl 1 (4). For now we can have

(5) $K\subset M$, 3,4 modus ponens

just as in Syl 1.

It may be noted here that our premise Syl 2 (4) is weaker than the conjunction Syl 1 (4) in the sense that it is implied by, but does not imply, Syl 1 (4). The difference between Syl 1 and Syl 2 is obvious. In Syl 1 we have specific class terms for all the variables of (B), whereas in Syl 2 we have left the middle term unspecified. Now the question is whether Syl 2 should be regarded as a syllogistic inference at all. We give the following reason for regarding it as a syllogism. If we accept the theory that the middle term of a syllogism need not be specified, then we can explain why given the conclusion 'all kings are mortal' we cannot uniquely determine the premises from which it follows, although in this particular case the figure and the mood are uniquely determined. This indeterminacy of the

premises (not of the *form* of the premises) is due wholly to the fact that different middle terms can be used to construct premises from which 'all kings are mortal' can be deduced syllogistically. The theory that the conclusion of a syllogism follows only from a conjunction of its so-called premises fails to bring out this essential feature of the middle term. A conclusion can be derived syllogistically even if a conjunction of the premises like Syl 1 (4) is not a premise, for Syl 2 (4) suffices to prove the conclusion (in our opinion syllogistically).

So far we have accepted the theory that a syllogism has one premise (other than the form), but let us now see what happens if we accept the traditional view that a syllogism is an inference with two premises. Now if we are to have *two* premises, then, of course, we must have specific terms in both the premises where no term-variable can occur. Then the question will arise: What it is to 'put them together'? We can now have a conjunction like Syl 1 (4), for its two conjuncts are separately available. So should we not say that, *when the two premises are separately available*, it is their conjunction which is the result of 'putting them together'? Our reply to this question is that the situation is not at all changed even when we have a specific term functioning as the middle term. For even when we use a specific term as the middle term of a syllogism the special properties of the objects denoted by the middle term are not relevant for the conclusion or for the syllogism. That is, if we know more specifically what the middle term is, even then it is only its relations to the major and the minor terms which are relevant to the syllogism. If we render Syl 2 (4) in ordinary English it becomes 'the class of kings is a subclass of *a class* which is itself a subclass of the class of mortals'. If we prefer the language of predication to the language of classes, we have the judgement 'that of which mortality is predicated (in a certain manner) is itself predicated (in a certain manner) of all kings'. This judgement may be regarded as involving predication of the second order, for that which is predicated of all kings is itself something of which mortality is predicated. Thus the 'putting together' of the two premises of a syllogism is not a mere conjunction of them, but is a complex judgement involving second order predication.

Now we sum up. The form of a syllogism may be conceived either as an implication with universally quantified term-variables, or as a form of inference with two premises 'put together'. In the first case, in order to get a concrete example of a syllogism it is not necessary to have a specific term functioning as the middle term. In the second case, although we must have a specific term as the middle term, yet the specific nature of the middle term is not relevant for the syllogism at all, and this fact should not be ignored when the premises are 'put together'. So the theory that the mere conjunction of the premises is necessary for a syllogism is unsatisfactory in both the cases and for exactly the same reason.

In the above we have tried to present the controversy between the Pūrva-Mīmāmsā and the Nyāya schools of Indian philosophy on this issue.

The philosophers of the Pūrva-Mīmāmsā school insist that the knowledge of the specific nature of the middle term (*vyāpyatāvacchedaka-prakāraka-jñānam*) is necessary for syllogistic inference. Against this contention the philosophers of the Nyāya school, specially of the later period beginning from Gangeśa Upādhyāya (circa 13th Century), claim that the specific nature of the middle term need not be known. The argument given by us in the paper is taken from the Nyāya text of Viśvanātha, circa 17th Century, ([2], pp. 213 ff). We have translated the Nyāya term *'viśiṣṭa-vaiśiṣṭyāvagāhi-buddhi' loosely* by 'judgement involving second order prediction'.

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PSYCHOLOGISM IN INDIAN LOGICAL THEORY

The Indian logical theories, the Nyāya in particular, offer interesting models in the light of which one may hopefully throw new light on some of the persistent problems in philosophy of logic, which are generally discussed within the framework of Western thinking. The new possibilities that they open up could be instructive, at least by way of extending the boundaries of our available models, and we may be able, as a consequence, to see some of the limitations under which discussions in philosophy of logic are carried out. I want to discuss here one such problem: the issue about psychologism in logic.

1.

To begin with the issue of psychologism.[1] How is logic related to psychology? Briefly stated, psychologism is the view that theoretical foundations of logic lie in psychology. If one appeals to the rather commonplace distinction between how one ought to think and how in fact one does think, psychologism insists that ideal, logical thinking is but a species of thinking in general, and so is governed by the same rules that hold good of all thinking. The anti-psychologist philosophers, such as Frege and Husserl, argue, as against psychologism, that it in effect reduces the necessary truths of logic to the inductive, probabilistic laws of psychology; that it confuses between the laws of being-true and the laws that determine taking-something-to-be-true, between the objective entities with which logic is concerned (such as concepts, propositions, theorems, theories) and the subjective and private events in peoples' minds, and finally that psychology as a science, i.e., as a theory, presupposes logic rather than *vice versa*. While psychologism is clearly at fault in seeking to derive the laws of logic from the way the human mind works (note that the idea of 'deriving' itself involves the logical principles), the extreme anti-psychologistic position leaves us with an unmitigated Platonism in the strong sense, a domain of abstract entities such as meanings, propositions and theories, sundered, on the one hand, from the mental acts of thinking and understanding which grasp them and, on the other, from the linguistic signs which "express" them. Is there any way to avoid these two alternatives?

The anti-psychologistic philosopher such as Frege is right in his intuition that the entities with which logic deals could not be privately owned, temporally individuated particulars, and that the logical truths are not inductive generalisations. But, it may be pointed out, he has an impoverished conception of mental life. This is certainly true of Frege, for whom the mental is the private particular and the laws about the mental are necessarily inductive generalisations. The question then for us is: why need we restrict ourselves to this impoverished concept of the mental? Is it not possible, given a suitably enriched philosophy of the mind, to give psychologism its due, while preserving the intuitions on which the anti-psychologistic positons are based?

I think that is possible. Indeed, there are several such systems already available. One is the Brentano-Husserl conception of an eidetic psychology. Another is to be found in the Indian logical theories, especially the Nyāya. In any case, what one needs is a conception of the mental according to which a mental event (or act) exemplifies or embodies a universal structure such that two or more numerically distinct mental events may exemplify or embody identically the same structure. In that case, within a mental event, one may distinguish between its particularity (which it shares with none other) and its universal features. Amongst universal features are to be counted not only such generic features as the property of being a belief or the property of being a desire, but also such specific features as 'being a belief that p' or 'being a desire for a cup of tea'. In brief, what one needs is the conception of a <u>structure</u> of mental acts. Once you have such structures, then one can talk about essential truths about different sorts of mental acts. In that case, a logic of propositions and an eidetic psychology of mental acts in which those propositions are entertained would have a closer relation than the radical anti-psychologism of Frege would like to admit, and yet both that relation and the nature of the relata would preclude one from falling into the obvious errors of psychologism.

In the light of these general remarks, let me now give a brief sketch of the Nyāya concept of (mental)[2] acts. If <u>m</u> is a mental act, it has an owner, i.e. a self, it occurs at a time, it has what Husserl calls an act quality[3] (i.e. it is either a perceptual act or an act of remembering, or an inference, or a desire, or a hope, and so on) and finally it has a structured content (about which I have more to say below). Of course, the act has an object, but the object falls outside the act. What represents the object within the act is the structure. The act <u>m</u> may then be represented as an ordered quadruple [self, t, q, content], where 't' stands for the time of the occurrence and 'q' for the act-quality. Our present concern is with the content.

The content of an act is neither the object of that act (which is, on Nyāya realism, always out there in the world) nor a real constituent of the act (which, in Nyāya ontology, has no parts, and so is formless, nirākāra, if 'form' signifies the structural arrangement of parts). To begin with, let us call it--using a concept handily available in phenomenology--'intentional content.' It is the object not as it is in itself but precisely as it is being presented in the act under consideration. The object out there in the world may remain the same, but for a different act having the same object, the structure of the content may very well change, depending on how precisely that object is presented in the new act. Consider the two perceptual acts expressed in the sentences:

(1) '(This is a) blue jar.' ('nîlo ghaṭah')

(2) 'The blue (is) of the jar.' ('ghaṭasya nîlah')

It would appear that whatever is the object out there is not changed by the change of one's perspective. In (1), the primary object is the jar which is being perceived as qualified by the colour blue. In (2), the primary object is the colour blue which is being perceived as belonging to the jar. I will not expound in detail the Nyāya analysis of these structures.[4] It would suffice to note that for the Nyāya such a structure is a concatenation of a whole set of (epistemic) entities, each of which serves a specific function of either qualifying/determining/limiting or being qualified/determined/limited by some other. These peculiar entities are epistemic, for they do not exist in the object per se, they arise only when a cognitive act is directed toward the object. These entities as well as their concatenated structures are, in an important sense, universal-like: another cognitive act may embody precisely the same structure. What the logician has directly to deal with is a cognitive act insofar as it exhibits such a structure. We have then a criterion of identity for acts for the purposes of logical analysis. Two acts m_1 and m_2 are l-identical, if they have the same act-quality and the same structure of their contents. The fact that they occur at different times and/or in different selves, is irrelevant.

At this point, one may wish to argue that the supposedly repeatable structure is nothing other than the proposition of Western logic. Two numerically distinct acts of belief are then l-identical in so far as they are beliefs in the same proposition. If the structure is nothing but the proposition, and since the proposition is an abstract entity towards which one may take different attitudes, or the same attitude at different times--then a logic of propositions would have to be

separated from a psychology of those attitudes. Now to appreciate the nature of the Indian logical theories, it is important to see why the content of a mental act as understood in the Indian logics is not the proposition of Western logic, not at least in one of the senses of 'proposition.' In this sense, which is also the sense in which detaching the proposition from the mental acts may be most persuasively effected, a proposition is that entity towards which many different, numerically as well as qualitatively different, attitudes and acts, belonging to the same or to different selves, may be directed. Now on the Nyāya analysis of the content of an act, the quality of the act does often make a difference to the content. In the sense of 'proposition' just indicated, the supposition 'S may be P', the question 'Is S P?' the denial 'S is not P' and the affirmation 'S is P' are all directed towards the same proposition. This is not the case in Indian logic, where analysis reveals a different structure in the case of 'Is S P?' than in the case of 'S is not P', and a different structure in the latter than in 'S is P'.[5] But the affirmative categorical 'This mountain has fire' does express the same content, not only when it expresses the cognitions of two different persons, or of the same person at different times, but also when it expresses cognitions of different types: perception, inference, or śabda. This justifies bringing these under one generic group called 'anubhava.' This is not to deny that there are attempts to still more finely individuate the content even across these variations, so that the structure of the content would be different in the case of a śābda knowledge from that in the case of an inferential knowledge, both again different from the structure of a perceptual knowledge. The 'proposition' of Western logic is not as finely individuated across the range of varying propositional attitudes.

There is still another difference between 'proposition' and the 'content' of Indian logic. Proposition is an abstract entity towards which a mental act is directed. Irrespective of how strongly one may want to ascribe to it an ontological status, it is independent of, and transcends that, or in fact any act directed towards it. But the content which one, through reflective analysis, discovers in an act, is that act's structure, not its object, not a transcendent entity.

Let us now see how this applies to the case of an inferential knowledge with which logic is concerned in the first place. This would involve determining in what sense the theory of inference proposed is, or is not, psychological. Consider the following account to be found in the Nyāya treatises on inference:

One sees smoke on a distant mountain. This leads him to remember the rule "Wherever there is smoke, there is fire" which he recollects as having been instantiated in cases such

as the familiar stove in the kitchen. He now recognises the smoke he saw on the mountain as a mark of fire in accordance with the rule he just remembered. At this point, if there is no unexpected hindrance, the person would, as a matter of course, be led to draw the conclusion: "therefore, there is fire on this mountain." This last sentence is an expression of an inferential cognition that has been produced in him.

What we have is a sequence of psychological events: a perception, a remembrance, a recognition, leading finally to an inferential cognition. These events belong to one and the same self, and are individuated both by ownership and temporal position. Now how can any such temporal sequence yield a logical rule? We can do that by (i) replacing the particular person concerned by a variable and making a universal quantification over it; (ii) by retaining appropriate relations of succession, but doing away with the actual temporal positions; (iii) by identifying the cognitions involved by their contents and temporal positions relative to the other cognitions figuring in the rule; and (iv) by requiring that all cognitions figuring in the rule must have one and the same owner. We then get a rule such as the following:

> (3) For any knower $\underline{S}$, if $\underline{S}$ has a perceptual cognition $\underline{Fx}$, and then remembers the rule, "Wherever $\underline{F}$, there $\underline{G}$: as instantiated in the uncontroversial case $\underline{O}$", and then perceives in $\underline{x}$ the same $\underline{F}$ as before but this time as figuring in the remembered rule "Wherever $\underline{F}$, there $\underline{G}$", then $\underline{S}$ will experience an inferential cognition of the form $\underline{Gx}$, provided there is no relevant hindrance.

This indeed is as much a law in eidetic psychology as one of epistemic logic of inference. It is arrived at by an intuitive induction over particular cases, it is not a probabilistic inductive generalisation.

Another set of such laws with which the Nyāya logic operates consists of the rules of the form:

> (4) If a cognition of the type $\underline{\emptyset}$ and with a structure $\underline{T}$ occurs at time t_n in a self $\underline{S}$, then a cognition of the type ψ and with a structure $\underline{T}'$ would not occur at time t_{n+1} in $\underline{S}$.

A simple and intuitively clear case of such a law is: if a person perceptually ascertains that -p, he cannot, at the immediately following moment, have a perceptual cognition that p. Or: if a person perceptually ascertains that p, that perceptual cognition will prevent the emergence, at the immediately succeeding moment, of an inferential cognition that -p

(even if other conditions for the latter cognition are present).

These rules are further strengthened by bringing into consideration non-cognitive causal conditions such as desire to have a certain sort of knowledge. One cognitive type $\emptyset$ is said to be stronger than another cognitive type ψ, just in case if the causal conditions of both are present the one belonging to the type $\emptyset$ will occur and the one belonging to the type ψ will be prevented from occurring. Thus, if the causal conditions for a perceptual cognition of the fire on yonder mountain are present, as well as conditions for an inferential cognition of the same in the same person, then the perception will occur, preventing the inference from occurring. But suppose, in addition, that there is a desire to infer: presence of this new factor will cause the inferential cognition to occur even if the perception has just occurred. One may infer "There is fire on the mountain" even if one just saw the fire on the mountain top, if only one desired to so infer.[6]

Given such an eidetic psychology of cognitions of which rules such as the above are fundamental principles, one can have a theory of inference which is indifferently a logic and a psychology of inference, but which is not 'psychologistic' in the pejorative sense. But given this formulation of theory of inference, a serious question arises. If the rule formulated in (3) is <u>also</u> a psychological law, then it would seem as though all persons would necessarily make the right sorts of inferences under right conditions, and it would be nearly psychologically impossible to commit a logical fallacy. For if the logical rules of inference are also rules of appropriate cognitive occurrences, then it would be impossible for men, given the psychological constitution that we have, to violate those rules. Now this indeed is the most difficult question for a psychologistic theory of logic to answer. However, let us try. The place we need to look at is the theory of invalid inference, or what has been called <u>hetvābhāsa</u> (to be construed as either defective <u>hetu</u> or the defects of <u>hetu</u>, <u>hetu</u> being the mark from which an inference is made). The standard definition of a defective <u>hetu</u> which would vitiate the inference in which it functions as <u>hetu</u> and would render it invalid is this: "the object of such knowledge as acts as the preventer of inferential cognition."[7] What is intended is, in brief, this: an inferential cognition of the form "S is P, because of m" would be prevented from occurring if the person under consideration has a knowledge of a situation which is, in fact, a defect of m <u>as a mark</u> of P-ness in S. Consider the obviously fallacious inferential cognition, "This lake possesses fire, because it possesses water." Such an inferential cognition can occur in a person only if he or she believes in the truth of the universal rule "Wherever there is water,

there is fire." However, if the person recognises that wherever there is water there is the absence of fire, which amounts to recognising that the hetu or mark is characterised by the defect known as 'viruddha', or that the hetu is a viruddha hetu, then the inferential cognition would be prevented from taking place. This is rather a curious way of putting the matter. Instead of being told that the person made an inference that is fallacious, we are rather told that he or she would not have made the inference if only he or she had known that the hetu that was being employed was defective. One way of understanding all this--the one I prefer, for it meshes well with the account I have developed earlier in this paper--is to take the thesis to imply that as rational beings we cannot make a fallacious inference, we only appear to be doing so. Since the causal conditions of inference require, in accordance with (3), that the person concerned must believe in the appropriate rule "Wherever there is m, there is p", he or she can infer only if there is such a cognitive occurrence in his or her mind, so the inference he or she makes will always be formally valid. Now that he learns that in fact "Wherever there is m, there is -p", this cognition will prevent that other rule-cognition and so eventually the inferential cognition from occurring. The implication of course is clear: even when we are apparently making an invalid inference, we are making it because we not only do not detect the fallacy involved but also because we are so construing the terms and the premises involved that the inference would turn out to be valid. Since psychologically it is impossible to make a fallacious inference, when we make an inference which by objective criteria is fallacious, what is happening is that we have given the premises and the terms, interpretations under which the logical and the psychological requirements are in fact satisfied. If those interpretations are changed--and this is what happens when the defect in the mark is recognised or pointed out--that inferential cognition would be prevented from recurring.

This is the price one pays for making the psychology of cognitions and the logic of propositions to coincide at least within the limits of elementary inferential operations. There is a concomitant commitment to rationality which rules out the possibility of making such obviously invalid inferences as "All men are mortal, Socrates is a man, therefore, Socrates is not mortal." However one who does make such an inference must be misconstruing the senses of the logical terms "All" and "not".

The thesis is not as improbable as it may look to be at first. Mary Henle has found out, by considering empirical data about errors in syllogistic reasoning by adults, that "where error occurs, it need not involve faulty reasoning, but may be a function of the individual's understanding of the

task or the materials presented to him."[8] In another experiment, this time with children, Henle fails to find evidence that thinking transgresses the rules of syllogism.[9] In most cases, the subjects understood the premises in a manner that accounted for the error, while no faulty reasoning process was employed. The implications of her findings, as Henle sees them, are that "the two blind alleys of psychologism and of the radical separation of logic from the study of thinking" have to be avoided. Saying that our actual thinking process exhibits an (implicit) logical structure does not, in her view, amount to psychologism, for it does not make "logic coextensive with thinking by making it illogical. Rather than denying logical requiredness, denying the demands of necessary implication, it seeks to show that such requiredness is central in actual human thinking."[10] Such a conception of actual human thinking, I want to emphasise, is germane to the Indian logical theories, especially the Nyāya which finds the logical in the texture of everyday actual processes of reasoning. This is done, as we have seen, by construing the mental processes of reasoning as rule-governed patterns of succession of cognitive events (jñānāni), the rules being not empirical generalisations but Brentano-like intuitive inductions.[11]

I would like to add, at the end, that the logical structure of a cognition should not be taken to coincide with the structure of the sentence which expresses that cognition, for one reason amongst others that there always shall be constituents of the cognition--e.g., the mode of presentation (a la Sibajiban Bhattacharrya = Fregean Sinn)[12] --which cannot be expressed but can only be shown in that sentence. In other words, for an expressed sentential constituent, there necessarily shall be an unexpressed epistemic constituent. This should not be construed as suggesting an ineffability thesis, for what is unexpressed in that sentence can be expressed in another which, on its part, shall have its own unexpressed epistemic content. A given sentential structure does not then provide a clue to eliciting the epistemic structure unless it is aided or rather supplemented by reflective analysis of one's own cognition. Structural analysis and reflection on the inner cognitive events are, ideally, made to supplement each other.

Here we have a possibility which neither Frege nor Husserl, in their eagerness to reject and overcome psychologism, saw; but Husserl was closer to seeing it than Frege.[13]

NOTES

1. 'Psychologism' here should be understood in that sense or cluster of senses in which Frege and Husserl used it.

2. The acts are not, strictly speaking, mental for the Nyāya; for in the Nyāya ontology mind (manas) acts as an instrumental cause in the production of the acts, while the acts belong not to manas but to the self. Extensionally, though, we may identify the acts as 'mental acts'.

3. Cp. E. Husserl, Logical Investigations, vol. II, Investigation 5. E. tr. J.N. Findlay.

4. Cp. J.N. Mohanty: 1966, Gangeśa's Theory of Truth, Santiniketan, Introduction; and B.K. Matilal: 1968, The Navya-Nyāya Doctrine of Negation, Harvard University Press, Cambridge, Mass.

5. For more on this, cp. Gangeśa's Theory of Truth, Introduction.

6. For more on such rules, cp. Sibajiban Bhattacharya, "Some Principles and Concepts of Navya-Nyāya Logic and Ontology," Our Heritage 24.1, 1-16 and 25.1, 17-56.

7. "Anumitipratibandhakayathārthajñānavisayatvam hetvābhāsatvam" Annambhatta in his Dîpikā on Tarkasamgraha.

8. M. Henle: 1962, 'On the Relation between Logic and Thinking', Psychological Review 69, 366-378, especially p. 373.

9. M. Henle: 1971, 'Of the Scholler of Nature', Social Research 38, 93-107.

10. Ibid., p. 107.

11. For Brentano's concept of eidetic psychology, see R.M. Chisholm: "Brentano's Descriptive Psychology," in The Philosophy of Brentano, ed. Linda McAllister, Humanties Press, Atlantic Highland, New Jersey, 1977, pp. 91-100.

12. Cp. Sibajiban Bhattacharya, loc. cit.

13. Cp. J.N. Mohanty: forthcoming, 'Husserl and Frege on the Overcoming of Psychologism'.

LAWRENCE DAVIS

TARKA IN THE NYĀYA THEORY OF INFERENCE*

As Western scholars have interpreted the writings of the Nyāya school of Indian philosophy we find the Naiyāyikas espousing a doctrine which is false. The position we read into their writing involves a basic error in logic and, since the specialty of the Naiyāyikas was logic, their commission of such an error would be puzzling. The purpose of this paper is to explain the interpretation which has led to difficulty, discuss the nature of the Naiyāyikas' position, and propose a way of interpreting the texts according to which there is nothing logically objectionable in what the Naiyāyikas say.

I. THE NATURE OF *TARKA*

The word *tarka* is used in several ways in Sanskrit. Its most general use is as *reasoning* of any sort, a kind of activity encouraged in some Vedic-period texts and discouraged in others.[1] In the Nyāya school its meaning is more specific. In particular, *tarka* is distinguished from *anumāna* (generally translated as *inference*), a type of reasoning which is described more or less formally by Gautama in the *Nyāyasūtras* (for a discussion of *anumāna* the reader is referred to Karl H. Potter's *Encyclopedia of Indian Philosophy*, vol. ii, Ch. 9.) Tarka has at least two senses in technical Naiyāyika discussions. It is viewed as a conditional (or subjunctive conditional) judgment in which each of the two judgments involved is false – "If water burned when drunk it would burn me too," for example. (Maṇikaṇṭha Miśra dissents from this characterization, arguing that "If the guest were to arrive he would have to be fed" is an example of *tarka* even if the guest does arrive and is fed.[2] However, the prevailing tradition is represented by Varadarāja's statement that the cause of *tarka* (the antecedent of the conditional) is a mark superimposed on something which does not really have it, and the consequent of the judgment is erroneous.)[3] The second sense of *tarka* in the Nyāya school is reasoning from an original position to an unacceptable conclusion, thereby forcing the giving up of the original position. This sense is the most important – indeed, this sort of *tarka* is singled out by Gautama and his successors for special

attention. Typically, reasoning of this sort uses *tarka* of the preceding sort, and we shall see that the Naiyāyikas may not have distinguished them. It is this sense of *tarka* which is the subject of this paper.

To begin with we shall consider what, in English philosophical terminology, *tarka* is. On this point commentators differ. One school of interpretation renders *tarka* as *reductio ad absurdum*. Thus we find Y. V. Athalye writing, "*Tarka* – *reductio ad absurdum* – requires some explanation."[4] Arthur B. Keith translates *tarka* as *reductio ad absurdum*, although he then notes that there are many varieties of *tarka*, only one of which is called *reductio ad absurdum* (the others seem to involve *reductio* reasoning only in a derivative sense.)[5] In a book devoted entirely to a discussion of *tarka* Sitansusekhar Bagchi translates *tarka* as "reasoning," although in the title of the book he characterizes it as "inductive reasoning" and in the text he writes, "Here as elsewhere reasoning assumes the form of a *reductio ad absurdum*."[6] Another school of thought is represented by Satischandra Vidyabhusana, who characterizes *tarka* as *confutation*, but notes that it may also be rendered as "argumentation, reasoning, hypothetical reasoning, *reductio ad absurdum*, etc."[7] A third approach is represented by S. S. Barlingay's characterization of *tarka* as implication with a premise in contrapositive form.[8] Finally, Karl H. Potter writes: "*Tarka* is sometimes rendered *reductio ad absurdum*, which is not altogether inaccurate, since *tarka* involves proposing a false hypothesis and then by showing it false proving the truth of its negation, or at any rate helping to prove the truth of its negation."[9] Elsewhere in the same work Potter writes, "*Tarka* arguments are formally similar to 0 [an example of *modus tollens* reasoning], in that the first member is a counterfactual conditional proposition, the second denies the consequent of the conditional, and the conclusion is the denial of its antecedent."[10] Potter seems to hold, then, that *tarka* should be rendered formally as a type of *modus tollens* reasoning, whereas many of the other commentators have in mind a conception of *tarka* as a variety of informal argument.

The reason for the variation in these accounts is not that the commentators have misunderstood the texts, but rather that the texts are not at all precise in their characterization of *tarka*, as opposed to their characterization of *anumāna*. I shall argue that *tarka* was never considered a formalized pattern of reasoning by the Naiyāyikas. Certainly Gautama's definition is informal enough: "Tarka is causal reasoning about a thing whose nature is not known in order to know its nature."[11] Vātsyāyana's commentary on this passage

provides the following example of *tarka* reasoning, following a doubt about whether knowers are originated or whether they have always existed:[12]

Pain, birth, activity, defects, and wrong knowledge; each of these is the cause of what precedes it, and in the destruction of the latter each former thing disappears. This is liberation and in this way both transmigration and liberation occur. This would not be the case if the knower were originated. Indeed, an originated knower would be joined with a body, senses, intellect, and consciousness, but this would not be the result of actions performed by him [which is impossible, according to the theory of karma]. Furthermore, a thing which is originated does not abide [forever]. But there is no enjoyment of the fruit of one's own actions on the part of one who does not exist or who has been destroyed [the two options just considered] and thus there would be no connection of the single knower with many bodies nor eternal liberation from the body.

This concludes the argument. Vātsyāyana then goes on to say:

Where one sees that the cause is not established, he does not accept it. So the definition is given [by Gautama]: "Tarka is reasoning [ūha]."

Succeeding accounts of *tarka* are similarly informal until the time of Varadarāja, who writes:[13]

Through knowledge of its true natue [*tarka*] is declared to be endowed with five members: 1. pervasion, 2. not being countered by a *tarka*, 3. coming to a stop in error, 4. being unwished-for and 5. unfavorableness.

One's first impression is that this passage provides us with a formal account of *tarka* parallel to Gautama's account of *anumāna* as a five-membered inference pattern, but appearances are misleading. Let us consider a naive rendering of the five "members" in the predicate calculus:

T1	1 $(x)(Px \supset Qx)$	("anything which is P is Q")
	2 Qa	("a is Q")
	3 $\sim Qa$	("a is not Q")
	therefore, $\sim Pa$	("a is not P")

I have rendered (1) as a relation between properties rather than sentences because Varadarāja speaks of one property's being pervaded by another (i.e., having the other occur wherever it does). I have also left out the second "member" since it is a condition on soundness rather than a formal component of the inference. But T1 as it stands is unsatisfactory because each of

the first three steps has the status of a premise and in this form the argument is too strong. (Anything follows from contradictory premises in the predicate calculus, and the second and third premises contradict.) By removing the second step we derive an argument of this form:

T2 1 $(x)(Px \supset Qx)$
2 $\sim Qa$
therefore, $\sim Pa$

The reader will recognize T2 as a variety of *modus tollens* reasoning, leading one to suggest it as a plausible rendering of Varadarāja's remarks. The case for T2 as the proper rendering is strengthened by consideration of the examples of *tarka* Varadarāja gives in his autocommentary on the five-membered version of *tarka*. Most of them consist of a single line of the form of (1) and one of them involves a statement of that form and a statement of the form of (2). None of them involve more formal complexity than this. Varadarāja's specimens of *tarkā* reasoning include these:[14] "If drinking water did not satisfy the thirsty, then water would not be drunk by the thirsty," "If water which was drunk burned inside then it would burn me too, being no different," and, in a case of looking at bare ground and doubting one's eyes, "If there were a pot it would be seen, as the ground is, because of its connection with the ground in similar instances of perception. But it is not seen." A logician concerned with stating a new form of reasoning would not surround his statement with examples which failed to conform to it. Hence the view supported by the texts would seem to be that Varadarāja's treatment is intended to be informal, but if a formal version had to be given, it would be T2. Furthermore, such a treatment of *tarka* is compatible with the remarks of the other commentators cited earlier, since *modus tollens* may be viewed as a type of *reductio ad absurdum* and the other characterizations of *tarka* cited earlier are descriptive of both sorts of reasoning.

Against all this I wish to propose a different formalization, one which involves adding a line rather than deleting one. In particular, I wish to argue that Varadarāja has omitted a line which we would normally consider part of the *tarka* process when he listed its members, although he did conceive of that line as a member, in a sense to be specified directly. The interpretation I am proposing is as follows:

T3	1 Pa	assumed
	2 $(x)(Px \supset Qx)$	premise
	3 Qa	
	4 $\sim Qa$	premise
	therefore, $\sim Pa$	

T3 is the formal representation of *reductio ad absurdum* – reasoning from a hypothesis to a contradiction and then to the rejection of the hypothesis. Given that Varadarāja does not list (1) as a member of *tarka* and given that his examples never display the prolixity of T3, why do I propose it as the proper rendering of *tarka*?

For two reasons. First, it seems clear that the Naiyāyikas had (1) in mind in their conception of *tarka*. Consider Udayana's definition of *tarka*, "*tarka* is giving scope to an undesired pervader by agreeing with the pervaded."[15] The point made here is that *tarka* involves an assumption of the antecedent of the conditional – an assumption which I include as (1). A second reason for adding a step rather than deleting one is that Varadarāja's account is not represented by T1 or T2 in another way. Line (2) of T1 is to be "coming to a stop in error," but T1 as it stands does not occur by coming to a stop since in T1 the relevant member is a premise rather than a conclusion and in T2 it is omitted altogether. By adding the first line of T3 the erroneous statement is gotten to by coming to a stop – it is inferred from the first two lines.

Why, then, don't we find the extra step when we are given a paradigm example of *tarka*? Because of the pragmatics of *tarka* use in the Nyāya theory. *Tarka* was involved when a doubt arose concerning the truth of a judgment arrived at by means of a *pramāṇa* (see the following sections for a discussion of *pramāṇas*). In reasoning, *tarka* was used to test one's own assumptions or conclusions or to test those of an opponent. Thus the first step of *tarka* has already occurred when *tarka* begins, and it has occurred as a part of a different process. This fact does not prevent *tarka* from being a part of the formalization in a Western system, but there is, I believe, an ontological assumption made by the Naiyāyikas which militates against such an approach. To allow parts of *tarka* to be members of two different sorts of mental acts would be to allow that there are wholes which overlap partially; that is, it would be to allow that there are wholes neither of which is contained completely in the other and which contain a common part. Although I know of no passages which pronounce clearly on the point, the

Nyāya theory of parts and wholes seems to have been like the theory of *jātis* – no overlapping relationships were permitted. (I am not claiming that this was a conscious or a formal reason for Varadarāja's omission of (1) as a step in the argument, only that it may have been a psychological one.)

At this point a few remarks about the status of the various formalizations we have considered are in order. Varadarāja was not proposing a formal account in his description of the five members of *tarka*. One indication of this is the fact that his second member is not a formal component of the argument, but rather a requirement on the soundness of the conditional judgment. Another is that *tarka* itself was not considered a valid form of argument *per se*, but rather a type of inference which, in Western terms, combines soundness and validity. Varadarāja wrote, "Given a defect in any of the members there would result the mere appearance of a *tarka*."[16] This passage is followed by examples of reasoning which are like the other examples of *tarka* except that they are based on false pervasions. In such examples Varadarāja writes that a *tarka* is nonexistent.[17] In the Western sense a formal argument is a pattern of inference which must yield a true conclusion when its premises are true, even if its premises do not happen to be true at the present time or in the world as it happens to be. In the Naiyāyika theory of inference *anumāna* and *tarka* are types of inferences which have true premises and a true conclusion. The defining characteristic of a valid inference form – that, given true premises of a certain form the conclusion *must* follow – does not seem to be given in the Naiyāyika texts. (One searches in vain for examples of inferences with false members which are described in terms suggesting the concept of validity.) What we have translated as formal inference patterns – *anumāna* and *tarka* – seem better understood as reasonings which combine soundness and validity, without these two features being explicitly distinguished.

Why didn't the Naiyāyikas arrive at a conception of formal validity? Because the vehicles of inference for them were different from those of the Western logician. For the Naiyāyika an inference is a series of *jñānas* – qualities of the self – rather than a series of sentences or propositions. A formal description does not arise as easily for mental occurrents as it does for sentences, where the logical operators may be isolated and described. Hence the explanation for Varadarāja's non-formal account: He was giving a phenomenological account of *tarka* rather than a formal account. His examples were not intended to be read as sentences which together constituted

the inferences. Rather they were to be taken as sentences descriptive of the mental states which were the inferences.

Thinking of matters in this way we arrive at the reason for the ambivalence between the two technical senses of *tarka* I referred to earlier: *tarka* in the first sense was a conditional judgment. *Tarka* in the second sense was a type of reasoning from one judgment, ending in a second, and causing the rejection of the first. Varadarāja (as opposed to Maṇikaṇṭha Miśra) was able to identify these two senses because everything occurring in an instance of the second type takes place in an instance of the first. To undergo a conditional judgment, in the sort of situation described by the Naiyāyikas as leading to an occurrence of *tarka* reasoning, is to entertain a judgment, move through a pervasion to a second which, as it is entertained, is felt to be false, and, still being entertained, causes a feeling of rejection of the first. Thus, phenomenologically, the Naiyāyikas identified the two senses of *tarka* and, since there is no formal account of *tarka* in the Nyāya literature, I conclude that *tarka*, as conceived of by the Naiyāyikas, was an informal variety of inference.

These considerations do not disallow us from attempting to describe *tarka* in formal terms, just as we are not disallowed from giving formal renderings of informal inference patterns in English. We must be aware that we are not giving an account in the terms of logicians who study it as an informal inference type, and we must be aware that we are isolating the components of the reasoning and describing them in sentence form, whether they be sentential in nature (as in the pervasion step) or affective in nature (as in the unwished-for step).

By now my justification for rendering *tarka* as T3 should be clear. The Naiyāyikas speak of assuming the antecedent, arriving at the consequent, seeing that the consequent is unacceptable, and rejecting the antecedent. Further, each of these aspects of *tarka* is mentioned in discussions of its nature. The conclusion to draw is that each of these aspects is to be represented when *tarka* is formalized.

I wish to stress the natue of the point I have made since I shall argue in a similar way in the last section of this paper: It may well be that the Naiyāyikas did not regard all the members of T3 as separable from the conditional judgment involved in *tarka*. This creates no difficulty as long as it is realized that an account of the phenomenology of inference and a formalization of inference are not the same. Further, it may well be that

the Naiyāyikas did not regard the initial step of T3 as part of *tarka*. If so, this demonstrates that their canons for determining members of inference patterns differ from Western ones. The initial step occurs as part of the process, its use is explicitly acknowledged by the Naiyāyikas, and its effects are discussed when *tarka* is discussed. *In a Western sense* the first step is a part of the pattern, even if it is not according to the Nyāya theory, and it is a Western version of *tarka* which I am attempting to derive here, based on what the Naiyāyikas have said.

II. THE PROBLEM WITH *TARKA*

In the Nyāya scheme of things the class of judgments (*jñānas*) contains these two subclasses: the set of *pramā jñānas* and the set of *apramā jñānas*. These terms are generally rendered into English as the set of true judgments (or knowledges, depending on the translator) and the set of untrue judgments (or knowledges). True judgments arise from one of four types of *jñānas* – perception (*pratyakṣa*), inference (*anumāna*), comparison (*upamāna*), and verbal testimony (*śabda*). The untrue judgments include doubt, error, and *tarka.*[18] According to this classification of things we find the Naiyāyikas in the unenviable position of asserting that *reductio ad absurdum* does not yield a true judgment. But *reductio* (or *modus tollens* – the problem arises for any of the formal renderings of *tarka*) is a valid inference form – if its premises are true its conclusion must be true as well. Varadarāja, at least, has asserted that the premises (2) and (4) of (T3) must be true. Why, then, do the Naiyāyikas assert that a valid argument with true premises does not produce a true judgment as a conclusion? Even worse, why do they do so in the face of schools of Indian philosophy which do allow it the status of a *pramāṇa* – the Jains and the followers of Rāmānuja and Madhva, for instance? Let us consider their arguments for this position.

(1) From Gautama on the Naiyāyikas regarded *tarka* as a facilitator of the *pramāṇas* rather than as a *pramāṇa* itself,[19] and it may seem plausible to think that *tarka* is not a *pramāṇa* for the same reason that memory (*smṛti*) is not a *pramāṇa*: it does not give us any *new* knowledge. Among the Vaiśeṣika writers (and some of the Nyāya writers) memory is not a *pramāṇa* because, as Śrīdhara writes, "*Smṛti* always grasps objects which have been known previously by other means, and it is that other means which determines whether the judgment is valid or not."[20] *Tarka*, when used in reasoning for

oneself, has a similar function. One perceives that there is no pot on the ground, acquiring knowledge through the *pramāṇa* of perception. One doubts the correctness of the knowledge – could there be an unperceived pot here? One resolves the doubt through *tarka*, concluding that there is no pot on the ground – a conclusion already established through perception.

This line of argument will not work for *tarka* employed against others. When an opponent asserts a position and one refutes it with *tarka* reasoning the conclusion may not be new for oneself, but it is certainly new for the opponent. In such (common) circumstances *tarka* does not seem to facilitate another *pramāṇa*. Instead it causes the opponent to be aware of a new truth. Varadarāja's characterization of *tarka* as issuing in the unacceptability of the first step shows that this conclusion is obtained through *tarka*, and clearly, this unacceptability was not previously recognized by the opponent. Hence this line of argument will not disallow *tarka's* status as a means to truth.

(2) Some of the Naiyāyikas classify *tarka* as a kind of doubt and some don't – Udayana for example[21] Aparārka asserts that indefinite knowledge (*anadhyavasāya*), imagination (*ūha*), and *tarka* are all members of the category of doubt (*saṃśaya*).[22] One can understand how such a classification might arise. According to the Naiyāyikas a doubt is a *jñāna* in which a subject is considered as possessing two incompatible properties, and it is not known which one (if either) the subject really has. In T3 the assumption is considered at the beginning and (as mentioned above) the *tarka* argument is proposed as a test of it. In the case of *tarka* used for oneself it is not known at the beginning whether the assumption is correct or whether its negation is correct. This fact in itself, however, is not sufficient to account for *tarka's* being rendered as a species of *doubt*, since the conclusion of a *tarka* is not doubted. It might be proposed that doubt arises at the end of the *tarka* argument because the first premise has been established by one argument and the conclusion – the negation of the first premise – has been established by another, creating doubt. But this doubt is not *necessarily* a feature of the argument and in fact many disputants who work through an argument in the *anumāna* form experience doubt, leading them to the use of *tarka*. This fact disqualifies neither type of argument from the status of a *pramāṇa*. The classification of *tarka* as a sort of doubt I believe to arise by default after *tarka* has been disallowed as a *pramāṇa* for other reasons.

(3) The members of *tarka* as represented in T3 include the assumption of a false judgment and the derivation of another, leading Udayana to classify

tarka as a species of error.[23] In considering the objection that *tarka* cannot facilitate the *pramāṇas* (much less be one) because it involves error, Varadarāja concedes the objection concerning error and defends *tarka* on pragmatic grounds, citing a prior view that the unwished-for result of *tarka* can cut off one's desire to believe a false position, aiding the *pramāṇas* in their work. These remarks are not liable to sway a Western logician because the offending members of T3 are (1) and (3), an assumption and a conclusion derived under an assumption, rather than premises in themselves. If the *premises* of T3 are true the conclusion follows, and there is no further trouble about it – so says the Western logician. The Nyāya ontology did not contain a place for assumed *jñānas*, however, and this understanding of *tarka* would not be open to them without an alteration of their classification of existents.

The reader is referred to Bagchi's book on *tarka*[24] for a series of arguments against allowing the status of a *jñāna* to hypothetical reasoning, but such passages do not seem to me to be convincing. What underlies the discussion is a sort of contamination theory of judgment according to which falsehood in a part of a judgment flaws the whole. I believe there are good psychological reasons for such a position. According to the *sūtras* the purpose of studying Nyāya is to achieve salvation through understanding things as they are. *Tarka* involves understanding things as they are not, and the consciousness of the user of *tarka* undergoes false *jñānas* when *tarka* is employed. A concern for the purity of consciousness could lead philosophers to distinguish those means to truth which do not involve false judgments from those which do. My view is that this concern motivated many of the Naiyāyikas to disallow *tarka* as a *pramāṇa*. Nonetheless we must note that *tarka* is used more frequently than *anumāna* in Naiyāyika disputation and that its results are accepted and employed in subsequent discourse. I have mentioned previously that the Naiyāyikas require sound premises in order for an inference to count as a case of *anumāna* or *tarka*. Now let us note a related fact, that the parts of each step of an inference must be true in order for it to count as a *pramāṇa*.

(4) Another line of argument in the Nyāya texts disallows *tarka* as a *pramāṇa* because it does not yield the sort of result which a *pramāṇa* yields. Correct employment of a *pramāṇa* yields understanding of things as they are, while correct employment of *tarka* does not. Uddyotakara's comments on this point are typical. In describing the difference between *tarka* and ascertainment he wrote that in the latter the result is a detailed understanding of something,

while the result of *tarka* is only that something ought to be the conclusion.[25] Said another way, this point is that the result of the *pramāṇas* is a state of accepting and an understanding of what is to be accepted. From *tarka* one derives a negative conclusion – a psychological state of rejection – connected to an understanding of something. This line of argument will not persuade the Western logician, since negative conclusions may be as true as positive ones, and it is truth which counts in Western logic rather than the nature of one's understanding of that truth.

There is an interesting difference between the Nyāya theory of inference and the formal logic of the West on this point. As noted earlier, the Nyāya theory takes an inference to be a succession of *jñānas* – qualities of the self – while the Western view takes an inference to be a series of sentences or propositions (depending on one's orientation), either of which are qualities of the self. According to the Nyāya view, put crudely but, I hope, not misleadingly for present purposes, knowledge of things as they are is a mental state which involves constituents and relations corresponding to an external object. The result of *tarka* reasoning is more complicated, being a state with constituents and relations which are unlike the object of the state, together with a feeling of rejection. This sort of state is not adequately described by a negative declarative sentence of the ordinary sort since according to the Naiyāyikas negative declarative sentences represent *jñānas* containing *absences*. The sentence "There is no pot on the ground" represents a mental state including the component *absence-of-pot*. This is the typical Naiyāyika treatment of negation, but this treatment is not given to the conclusion of *tarka* reasoning, a *jñāna* which shows what ought to be ascertained but does not in itself constitute ascertainment. Here the Naiyāyika has drawn a distinction where a Western logician does not, between a negative judgment which is a rejection of a false judgment and a judgment which includes a negative component. Such a distinction *can* be drawn in Western terminology – I have just drawn it – but it is not necessary to draw it in order to assess the validity of an argument form, and validity is a prime concern of Western logicians, together with the determination of truth values. The primary concern of the Naiyāyikas lay in acquiring a state of mind which represented reality through a kind of isomorphism, and the truth of a judgment (in Western terms) was not as important as the relation between the judgment and reality which constitutes its truth.

III. A SOLUTION TO THE PROBLEM

The Naiyāyikas believed that *tarka* is not a *pramāṇa*. I have argued that *tarka* is best represented in Western terms as *reductio ad absurdum*. It is customary to translate *pramāṇa* as "means to truth," or something similar. In so doing we arrive at the problem discussed in the previous section, "Why didn't the Naiyāyikas think that *reductio ad absurdum* is a means to truth?" Of the many responses to this question, let us consider three common ones. A person might contend that the Naiyāyikas were simply wrong and that we should regard their position as a curiosity produced by a school of logicians lacking a conception of formal validity. Or one might hold that the Naiyāyikas experienced deeper insights into the nature of things than we do, that they have discovered a sort of truth which Western logicians are unaware of, involving actual perception of things as they are and leading to a rejection of means to lesser truths. Or one might hold that the Naiyāyika scheme of things is obviously so alien to the Western scheme that attempts to explain the one in terms of the other are best avoided.

My own position is different from these but, arising as it does from belief in the non-extraordinary but quite competent abilities of the Naiyāyikas as students of human reasoning, together with belief in the ultimate communicability of philosophical schemes between languages and cultures, it may not be acceptable to proponents of the views I have already outlined. In these matters one must choose one's own methodology and operate according to it. In my view one arrives at a rendering of a position formulated in a different language by postulating equivalents between words of the two languages and testing the result for sequences of arguments and discussions of them. This process – seized upon for criticism in another context by Quine[26] and singled out for discussion by hermeneuticists – is the only way we have to represent the positions of the Naiyāyikas to Western philosophers. The problem which has arisen concerning *tarka* is evidence that the connections which have been established between the Sanskrit terms we have discussed and their proposed English equivalents require some modification. Let us consider two such modifications and their results:[27]

(1) The translation of *pramāṇa* as "means to truth" is misleading in that the Naiyāyikas intend it to exclude some procedures which are clearly means to truth – *tarka*, for instance. The arguments are explicit on this point: to be a *pramāṇa* is to be a special means to truth, such that no false judgment is

entertained while the means is being employed, and such that the result is a knowledge of the true nature of things rather than, e.g. a rejection of a false view of the nature of things. (Deriving from this modification would be the understanding of *pramā* as knowledge of the nature of things or such knowledge gained without the consideration of false judgments.)

(2) The translation of *anumāna* as "inference" is similarly misleading. It is commonly held that the Naiyāyikas employed only one type of inference – *anumāna*. It should be clear enough from what has been said that *tarka*, too, was a type of inference, in Western terms. It was distinguished from *anumāna* but it played the role an inference plays in reasoning and its nature was characterized (although not formally) by Varadarāja. The conclusion to draw from these facts is that "inference" is not the best translation of *anumāna*. Instead one should read *anumāna* as "inference of a certain form comprised of judgments none of which are untrue". This alteration will have consequences for our reading of *pramā*, which will no longer be translated as "truth" but as "truth which involves things as they are."

In making these alterations the connections between the Sanskrit and English technical terms have been altered in an interesting way. I am suggesting that we acknowledge a difference in concern between the Naiyāyikas and the Western logicians. The concerns of the Naiyāyikas were of a spiritual sort – the purity of consciousness and the absolute liberation of the self – and this led them to make distinctions between types of inferences and types of understandings of truths which are not typically made in the West. The concern of the Western logician is for formal validity and truth-conditions. This leads a Western logician to concentrate on those aspects of reasoning and leave aside considerations of the nature of our conceptions of truth. This does not mean that the distinctions cannot be made (proof lies in the body of this paper). It does not mean that the Naiyāyikas were poor logicians – it is our preliminary correlation of technical terms which produces this impression. And so far I have not presented any argument to the effect that the Naiyāyikas were philosophers of greater metaphysical insight than Western philosophers. As a result the conclusions of this paper may seem unappealing. I have recommended the introduction of a good deal of verbosity in rendering Nyāya texts and I have done away with some fascinating (but wrong) position in the area of philosophy of logic. Nevertheless I urge the consideration of these proposals by the reader, for they seem to me to yield fairer renderings of the Nyāya positions and their

adoption will have interesting consequences for our understanding of many other aspects of Nyāya – the controversy over the nature of *pramāṇas*, for one.

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NOTES

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[1] See S. C. Vidyabhusana's *A History of Indian Logic*, Motilal Banarsidass, 1971, pp. 36–39 for an account of the status of logic (*ānvīkṣikī*) in Vedic times. Citations of anti-logical attitudes given by Vidyabhusana include warnings to Vedantins against divulging their doctrines to logicians and a tale in the Mahābhārata of a Brahman who carried on debates without adhering to the Vedic faith and became a jackal in his subsequent life. Vidyabhusana also cites cases of penalties inflicted on logicians and ridicule of Gautama as "Gotama," "the most bovine" – a Sanskrit pun. Pro-logical passages cited include the endorsement of logic when it does not conflict with the Vedas or the laws of Manu and a variety of attestations to the utility of the discipline of logic, culminating in the according of formal status to Nyāya as an orthodox *darśana* after the time of Gautama.

[2] *Nyāyaratna* of Maṇikaṇṭha Miśra, E20–26, as summarized by V. Varadachari (reference follows that in Potter's *Indian Metaphysics and Epistemology*.)

[3] *Tarkasya viṣayakāraṇaprayojanāni darśayati. Asyāvijñātatattvo arthaḥ sandigdho viṣayo mataḥ heturāropitaṁ liṅgaṁ phalaṁ tattvārthanirṇayaḥ*. Varadarāja's *Tārkikarakṣā* I.73 and autocommentary, p. 190 in V. P. Dvivedin, (ed.), reprinted in *The Pandit*, 1903.

[4] *Tarka-Saṁgraha* of Annambhatta, edited and commented on by Y. V. Athalye, Bombay Sanskrit Series, 1930, p. 356. Athalye goes on to provide some additional remarks as to what *tarka* is and isn't.

[5] *Indian Logic and Atomism*, Arthur B. Keith, Oxford Clarendon Press, 1921, pp. 60–62.

[6] *Inductive Reasoning: A Study of Tarka and its Role in Indian Logic*, Sitansusekhar Bagchi, Calcutta Oriental Press, Calcutta, 1953. See p. 4, p. 7, and occasional references throughout the book.

[7] *A History of Indian Logic*, p. 61.

[8] *A Modern Introduction to Indian Logic*, S. S. Barlingay, National Publishing House, Delhi, 1965, p. 126. See also the fuller discussion in pp. 119–128. According to Barlingay the "real form" of *tarka* is "If not-*q* then not-*p*" but I do not agree with this interpretation. Certainly the examples we are given do not have this form, although one might be able to construe them in this way using logical equivalence as a criterion.

9 *Indian Metaphysics and Epistemology: The Tradition of Nyāya-Vaiśeṣika up to Gaṅgeśa*, Karl H. Potter, (ed.), Princeton University Press, 1977, p. 203. (See also p. 178). This invaluable volume is the second volume of Potter's *Encyclopedia of Indian Philosophies.*
10 Ibid., p. 108.
11 *Avijñātatattve arthe kāraṇopapattita stattvajñānārtham ūhas tarkaḥ*, in Gautama's *Nyāya Sūtras* 1.1.40.
12 *Duhkhajanmapravṛttidoṣamithyājñānānāṁ uttaramuttaraṁ pūrvasya pūrvasya kāraṇam, uttarottarāpāye ca tadanantarābhāvādapavarga iti syātām saṁsārāpavargau. Utpattidharmake jñātari punarhna syātām. Utpannaḥ khalu jñātā dehendriyaviṣayabuddhivedanābhiḥ saṁbadhyata iti nāsyedaṁ svakṛtasya karmaṇaḥ phalam. Utpannaśca bhūtvā na bhavatīti, tasyāvidyamānasya niruddhasya vā svakṛtakarmaṇaḥ phalopabhogo nāsti, tadevamekasyānekaśarīrayogaḥ śarīraviyogaścātyantaṁ na syāditi, yatra kāraṇamanupadpadyamānaṁ paśyati, tannānujānāti. So ayamevaṁlakṣaṇa ūhastarka ityucyate.*

From Vātsyāyana's *NyāyaBhāṣya* on *NyāyaSūtra* 1.1.40, in *Nyāyadarśana of Gautama*, Anantalal Thakur, (ed.), Mithila Institute, Darbhanga, 1967, p. 581.

The translation is mine. In the case of the passage "*Utpannaśca bhūtvā na bhavatīti*" I have followed N. S. Junankar in his *Gautama: the Nyāya Philosophy* (Motilal Banarsidass, Delhi, 1978). Whatever one's rendering of this phrase, it will not affect the point being made by citation of the passage.

I have not translated "*viṣaya*" in the compound "*dehendriyaviṣayabuddhivedanābhiḥ*" following the editor's suggestion that it may be an incorrect interpolation. This, too, does not affect the point the passage is being used to make.

13 *Aṅgapañcakasampannastattvajñānāya kalpate .... Vyāptistarkāpratihatiravasānaṁ viparyaye. Tārkikarakṣā* I.71–72, pp. 186–7.
14 Ibid., pp. 185–204. These are the examples quoted: *Yathā yadyudakaṁ pītaṁ pipāsāṁ na śamayettarhi pipāsunā na pīyeta*, autocommentary on I.70, p. 185; *Yadyudakaṁ pītaṁ paramantaradhakṣyattadaviśiṣṭaṁ māmapi dahet*, autocommentary on I.70, pp. 185–6; ... *iha bhūtale ghaṭo nāstīti bhūtalavadghaṭābhāve 'pi pravartamānaṁ yadyabhaviṣyatghaṭo bhūtalamivādrakṣyattasya tena saha tulyadarśanayogyatvāt*, autocommentary on I.75, pp. 200–201.
15 *Vyāpyāṅgīkāreṇāniṣṭavyāpakaprasañjanaṁ tarka iti*, Udayana's (or Śivāditya's – the point has been disputed) *Lakṣaṇamālā*. The definition is quoted by Varadarāja in the autocommentary on the *Tārkikarakṣā*, p. 191.
16 *Aṅgānyatamavaikalye tarkasyābhāsatā bhavet, Tārkikarakṣā* I.73, p. 188.
17 *Ukteṣvaṅgeṣvanyatamasyābhāve tarka ābhāso bhavati*, autocommentary on the *Tārkikarakṣā* I.73, p. 188.
18 The classification is taken from Satischandra Chatterjee, as presented in Potter's *Indian Metaphysics and Epistemology*. It does not represent the position of every Naiyāyika, but the classifications relevant to this paper – especially that of *tarka* as a non-*pramāṇa* – were universally adhered to within the school.
19 See fn. 11. The position is reiterated in subsequent texts. Varadarāja, for example, writes *Pratyakṣādeḥ pramāṇasya tarkonugrāhako bhavet.* (Tārkikarakṣā I.74, p. 193). See the subsequent commentary for a discussion of the manner in which it does the facilitating.
20 *Nyāyakandalī* on the *Padārthadharmasaṁgraha*, by Śrīdhara, Durgodhara Jha Sarma, (ed.), p. 627.
21 In the *Kiraṇāvalī* II.91–93 Udayana classes *tarka* as a variety of error (*viparyaya*)

instead of a type of doubt. But his reason is that error is due to the apprehension of a different property in a given locus (II.95, as summarized by Bimal K. Matilal in *Indian Metaphysics and Epistemology*.)

22 In Aparārka's *Nyāyamuktāvalī*, commenting on Bhāsarvajña's *Nyāyasāra*, section 4 (as summarized by S. S. Sastri in *Indian Metaphysics and Epistemology*.)

23 See fn. 21.

24 *Inductive Reasoning*, Ch. IV.

25 Uddyotakara's *Nyāyavārttika*, I.40.

26 Chapter II of *Word and Object*, Willard van Orman Quine, M.I.T. Press, Cambridge, Mass. There Quine sets forth his doctrine of the "radical indeterminacy of translation," the consequence of which would seem to be that a "best" translation of the sort I have aimed at in the text, cannot be settled on.

27 S. S. Barlingay attempts to solve the problems raised in this paper in a fashion methodologically similar to the way I have attacked them in *A Modern Introduction to Indian Logic*, pp. 121–128, but his conclusions are different.

Anekānta: both yes and no?*

BIMAL KRISHNA MATILAL

I

A metaphysical thesis, in the context of classical Indian philosophy at least, usually (more often than not) takes the form of such a proposition as 'Everything is *F*' or 'Nothing is *F*'. Philosophical rivalry springs from the varieties of such proposed positions, that is, varieties of such *F*s. For example, the Advaita Vedānta says, 'Everything is Brahman', the Mādhyamika, 'Everything is empty of its own-being or own-nature', and the Yogācāra, 'Everything is a *vijñāpti* making of consciousness'. We may add to the list even such positions as 'Everything is non-soul, impermanent and suffering' (the Buddhist in general), and 'Everything is knowable and namable' (the Nyāya-Vaiśeṣika). If we have to add the Jainas to the list, then we can say that their position is: Everything is 'non-one-sided' *anekānta.* However, I shall argue that at least on one standard interpretation, the Jaina thesis is held at a slightly different level; if the others are called metaphysical, this one may be called meta-metaphysical. The sense of it will be clear later on. I do not wish to claim this to be the 'one-upmanship' of the Jainas. The claim here is a modest one; it harks back to the historical origin of the position.

It is rather hard to see how such metaphysical theses as illustrated above, in the form of 'Everything is *F*', can be proven in a straightforward manner. They are often presuppositions, sometimes accepted as an axiom of a system. The argument, if there is any, must be indirect or *reductio-ad-absurdum*, it is persuasive and suggestive. It may be pointed out at this stage that according to the later Nyāya school any argument that has a conclusion (a thesis) of the form 'Everything is *F*', is fallacious, because it would be inconclusive. To use their technical vocabulary, the inferred conclusion of the form 'Everything is *F*' (where 'Everything' is the subject term, playing the role of a *pakṣa*), is faulty because it suffers from the defect called *anupasaṃhārin*. Such a defect occurs when and only when the *pakṣa* (the subject locus) is *kevalānvayin* which corresponds to a universal class. Strictly speaking, we should say that the property that qualifies the subject locus here, that makes it what it is, a subject-locus, is a universal (or everpresent) property. Such being the case, we cannot *compare* or *contrast* it with anything else. The

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Indian theory of inference, on the other hand, depends essentially upon the possibility of such comparison (by the citation of a *sapakṣa*) and contrast (by the citation of a *vipakṣa*). This does not make the Indian or the Nyāya theory a theory of inference based upon analogy. It only certifies its empirical, that is its non-*a priori*, character. Proving something to be the case here means to make it intelligible and acceptable by showing how, (1) it is similar to other known cases and (2) what it differs from and in what way. This demand on the proof is much stricter than usual. Otherwise, the Indians will say that something may actually be the case but it cannot be claimed or established as such. Hence the inconclusiveness (*anaikāntika*) of the said type of inferences was regarded as a defect, a *hetvābhāsa*.

A metaphysical thesis was usually expressed in the canonical literature of Buddhism and Jainism in the form of a question 'Is *A B*?' 'Is everything *F*?', to which an answer was demanded: either yes or no. If yes, the thesis was put forward as an assertion, that is, the proposed position '*A* is *B*' or 'Everything is *F*' was claimed to be true. If no, it was denied, that is, it was claimed as false. Therefore, 'yes' and 'no' were substitutes for the truth-values, true and false. The Buddhist canons describe such questions as *ekāṃśa-vyākaraṇīya*, those that can be answered by a direct yes or no. However, both the Buddha and the Mahāvīra said that they were followers of a different method or style in answering questions. They were, to be sure, *vibhajya-vādin*, for they had to analyse the significance or the implications of the questions in order to reach a satisfactory answer. For, it may be that not everything is *F*, although it may not be true that nothing is *F*.

The followers of the Mahāvīra developed their doctrine of *anekānta* from this clue found in the canonical literature. This is the clue of *vibhajya-vāda*, which originally meant, in both the Buddhist and Jain canons, a sort of openness—lack of dogmatic adherence to any viewpoint exclusively. The philosophy of Jainism has been called 'Non-dogmatism' or 'Non-absolutism'. I prefer the literal rendering 'non-onesidedness', for it seems to retain the freedom of the interpreter as well as its open-endedness.

A metaphysical puzzle seems to have started in the early period in India (as it did in Greece too) with a dichotomy of basic predicates or concepts such as, being and non-being, permanence and change, is and is-not, substance and modes, identity and difference. Although the five pairs just cited are not strictly synonymous, they are nevertheless comparable and often interchangeable depending, of course, upon the context. The first of these pairs used to be captured by a common denominator, *à la* the Buddhist canons, called Eternalism or *śāśvatavāda*, while the second pair constituted the opposite side, Annihilationism or *uccheda-vāda* (sometimes, even Nihilism). In the same vein, i.e. the vein of rough generalization, we put the spirituality of reality on one side and the materiality of reality on the other. Looking a little further we can even bring the proverbial opposition between

Idealism and Realism, in their most general senses, in line with the above pairs of opposites.

Avoidance of the two extremes (*anta* = one-sided view) was the hallmark of Buddhism. In his dialogue with Kātyāyana, the Buddha is said to have identified 'it is' as one *anta* (= extreme) and 'it is not' as the other extreme, and then he said that the Tathāgata must avoid both and resort to the middle. Hence Buddhism is described as the Middle Way. The Mahāvīra's *anekānta* way consisted also in not clinging to either of them exclusively. Roughly, the difference between Buddhism and Jainism in this respect lies in the fact that the former avoids by *rejecting* the extremes altogether while the latter does it by *accepting* both with qualifications and also by reconciling between them. The hallmark of Jainism is, therefore, the attempted reconciliation between the opposites.

II

It would be better to start with some traditional descriptions of the concept of *anekānta*. An alternative name is *syādvāda*. Samantabhadra describes it as a position 'that gives up by all means any categorically asserted view' (*sarvathaikāntatyāgāt*) and is dependent (for its establishment) upon the method of 'sevenfold predication' (*Āptamīmāṃsā*, 104). Malliṣeṇa says that it is a doctrine that recognizes that each element of reality is characterized by many (mutually opposite) predicates, such as permanence and impermanence, or being and non-being. It is sometimes called *vastu-śabala* theory (SdM, p. 13), that underlines the manifold nature of reality. Manifoldness in this context is understood to include mutually contradictory properties. Hence, on the face of it, it seems to be a direct challenge to the law of contradiction. However, this seeming challenge should not be construed as an invitation to jump into the ocean of irrationality and unintelligibility. Attempts have been made by an array of powerful Jaina philosophers over the ages to make it rationally acceptable. We will see how.

Guṇaratna Sūri, in his commentary on Haribhadra's *Sarva-darśana-saṃgraha*, says that the Jaina doctrine is to show that the mutually opposite characterization of reality by the rival philosophers should be reconciled; for, depending upon different points of view, reality can be discovered to have both natures, being and non-being, permanent and impermanent, general and particular, expressible and inexpressible. The Jainas argue that there are actually seriously held philosophical positions, which are mutually opposed. For example, we can place the Advaita Vedānta at one end of the spectrum, as they hold Brahman, the ultimate reality, to be non-dual, permanent, substantial, and an all-inclusive being. This is where the 'being' doctrine culminates. The Buddhists, on the other hand, are at the other end of the spectrum. Their doctrine of momentariness (as well as emptiness)

is also the culmination of the 'non-being' doctrine, which can also be called the *paryāya* doctrine. Traditionally, in Jainism, *dravya* 'substance' ('permanence', 'being') is contrasted with *paryāya* 'modification', 'change' or even 'non-being'. One should be warned that, by equating Buddhism with 'non-being', I am not making it nihilistic. For 'non-being' equals 'becoming'. *Paryāya* is what is called a process, the becoming, the fleeting or the ever-changing phases of the reality, while *dravya* is the thing or the being, the reality which is in the process of fleeting. And the two, the Jainas argue, are inextricably mixed together, such that it does not make any sense to describe something as exclusively 'permanent', a *dravya,* without necessarily implying the presence of the opposite, the process, the fleetingness, the impermanence, the *paryāya.* Being and becoming mutually imply each other, and to exclude one or the other from the domain of reality is to take a partial (*ekānta*) view.

The idea is not that we can identify some elements of reality as 'substance' and others as 'process' or *paryāya.* Rather, the claim is that the same element has both characteristics alternatively and *even simultaneously.* It is the last part, 'even simultaneously', that would be the focus of our attention when we discuss the sevenfold predication. The challenge to the law of contradiction that we have talked about earlier can be located, in fact, pin-pointed, in this part of the doctrine. The *anekānta* has also been called the *ākulavāda,* a 'precarious' doctrine. The idea is, however, that it challenges any categorically asserted proposition, ordinary or philosophical. Its philosophical goal is to ascribe a 'precarious' *value* to all such propositions. It condones changeability of values (i.e. truth-values). However, it does not amount to scepticism, for the manifoldness of reality (in the sense discussed above) is non-sceptically asserted. It is also not dogmatism, although it can be said that they were dogmatic about non-dogmatism.

III

How do the Jainas argue in favour of their position and answer the charge of irrationality and unintelligibility? Traditionally, their method of *saptabhaṅgī* or 'sevenfold predication' as well as their doctrine of 'standpoints' (*nayavāda*) supplies the material for the constructive part of the argument. To answer criticism, however, they try to show how contradictory pairs of predicates can be applied to the same subject with impunity and without sacrificing rationality or intelligibility. This may be called the third part of their argument. I shall comment on the last by following an outstanding Jaina philosopher of ninth century A.D. Haribhadra. In another section, I shall discuss the first part, the sevenfold predication, before concluding with some general comments.

In his *Anekāntajayapatākā* ('The Banner of Victory for Anekānta'), Haribhadra formulates the opponents' criticism as follows (we will be concerned with only a few pages of the first chapter). He first selects the pair: *sattva,*

'existence' or 'being', and *asattva*, 'non-existence' or 'non-being'. The opponent says G.O.S. 1940 edn., p. 11):

> Existence is invariably located by excluding non-existence, and non-existence by excluding existence. Otherwise, they would be non-distinct from each other. Therefore, if something is existent, how can it be non-existent? For, occurrence of existence and non-existence in one place is incompatible . . .
>
> Moreover, if we admit things to be either existent or non-existent, existence and non-existence are admitted to be properties of things. One may ask: are the property and its locus, the thing, different from each other? Or are they identical? Or, both identical and different? If different, then, since the two are incompatible, how the same thing can be both? If identical, then the two properties, existence and non-existence, would be identical . . . . And if so, how can you say that the same thing has (two different) natures? (pp. 11-12)

The main point of the argument here depends upon reducing the Jaina position to two absurd and unacceptable consequences. If the properties (or the predicates) are incompatible (and different), they cannot characterize the same entity. And if they are somehow shown to be not incompatible, the Jainas lose their argument to show that the same entity is or can be characterized by two incompatible properties. Haribhadra continues:

> If they are both, identical and different, we have also two possibilities. If they are different in one form or one way and identical in another way, then also the same cannot be said to have two different natures. However, if they are different in the same way as they are identical with each other, this is also not tenable. For there will be contradiction. How can two things be different in one way, and then be identical in the same way? If they are identical, how can they be different?" (pp. 12-13)

This is the opponent's argument. The formulation is vintage Haribhadra. Now the answer of Haribhadra may be briefly given as follows:

> You have said 'How can the same thing, such as a pot, be both existent and non-existent?' This is not to be doubted. For it (such dual nature of things) is well-known even to the (unsophisticated) cowherds and village women. For if something is existent in so far as its own substantiality, or its own location, or its own time or its own feature is concerned, it is also non-existent in so far as a different substantiality, a different location, a different time or a different feature is concerned. This is how something becomes both existent and non-existent. Otherwise, even such entities as a pot would not exist. (p. 36)

The existence of an entity such as a pot depends upon its being a particular

substance (an earth-substance), upon its being located in a particular space, upon its being in a particular time and also upon its having some particular (say, dark) feature. In respect of a water-substance, it would be non-existent, and the same with respect to another spatial location, another time (when and where it was non-existent), and another (say, red) feature. It seems to me that the indexicality, or the determinants of existence, is being emphasized here.

To make this rather important point clear, let us consider the sentence:

It is raining.

This would be true or false depending upon various considerations or criteria. It would be true if and only if it is raining, but false if it happens to be snowing. This may correspond to the 'substantiality' (*dravyataḥ*) criterion mentioned by Haribhadra. Next, the same would be true if and only if it is raining at the particular spot where the utterance has been made, otherwise false (at another spot, for instance). It would be likewise true if and only if it is raining now when it has been uttered, but false when the rain stops. Similarly, it would be again true if and only if it is raining actually from rain-clouds, for instance, not so when it is a shower of water from artificial sprinklers. It is easy to see the correspondence of these criteria with the other three mentioned by Haribhadra.

Haribhadra, in fact, goes a little further to conclude that a statement like 'It is raining' or even 'The pot exists' has both truth-values, it is both true and false, in view of the above considerations. In fact, it is better to talk in terms of truth-values (as will be clear below), rather than in terms of the contradictory pairs of predicates. For the law of contradiction, as it is usually stated in ordinary textbooks of logic, requires that the denial of a predicate, *F*, of a subject, *a*, be the same as the affirmation of the contradictory predicate of the same subject and vice versa. Besides, saying yes and no to such questions as 'Is *a F*?' is equivalent to assign truth and falsity respectively to the statement '*a* is *F*'.

One may argue that discovery of the indexical elements on which the determinants of a truth-value depends, that is, of the indexical determinants for successfully applying a predicate, may not be enough to draw such a radical conclusion as the Jainas want, namely, co-presence of contradictory properties in the same locus or assigning of both truth and falsity to the same proposition. Faced with such questions where indexical elements play an important and significant role, we may legitimately answer, 'yes and no. It depends'. However, to generalize from such evidence that the truth and falsity of all propositions suffer from this indeterminacy due to the presence of the indexical or variable elements, and further, that all propositions are therefore necessarily and omnitemporally (*sarvathā* and *sarvadā*) both true and false, may be an illicit jump. The successful application of any predicate to a thing, on this view, depends necessarily upon a variable element such

that it can or cannot be applied accordingly as we can substitute one or another thing for these variable elements. These elements, which may remain hidden in a categorically asserted proposition, is sometimes called a point of view or a standpoint. It also amounts to a view which announces that all predicates are *relative* to a point of view; no predicate can be *absolutely* true of a thing or an object in the sense that it can be applied unconditionally at all times under any circumstances. Jainism in this way becomes identified with a sort of facile relativism.

If the points in the above argument are valid, then it would be a sound criticism of Jaina philosophy. However, let us focus upon two related points. First, relativism. The reflexes of relativism are unmistakable in Jainism, as they are in many modern writers. The familiar resonance of Jainism is to be found in Nelson Goodman (*The Ways of World-Making*). A typical argument is to show how the earth or the sun can be said to be both in motion and at rest depending upon the point of view. An obvious criticism of facile relativism (though not that of Goodman) is that it can be shown to be self-inconsistent, for in trying to argue that all truths are relative to some point of view or other, it makes use of an absolute notion of truth. Will this charge hold against Jainism? I do not think so. For Jainism openly admits an absolute notion of truth, which lies in the total integration of all partial or conditionally arrived at truths, and is revealed to the vision of an omniscient being such as the Mahāvīra. The emphasis here is on the conditionality and limitedness of the human power and human vision and therefore it applies to all humanly constructible positions. The concern is somewhat ethical. Rejection of a seriously held view is discouraged, lest we fail to comprehend its significance and underlying presuppositions and assumptions. The Jainas encourage openness.

Are the Jainas guilty of illicit generalization? This is another point of the above critique. All predicates for which there is a contradictory one, are indeterminate as regards the truth and falsity of their application. In fact, by claiming that the contradictory pairs are applicable they take the *positive* way out as opposed to the Buddhists, the Mādhyamikas, who take the *negative* way. Of the familiar four Buddhist alternatives, yes, no, both, and neither, the Jainas may prefer the third, both yes and no, while the Mādhyamikas reject all four. If unconditionality and categorically of any predication, except perhaps the ultimate one, *anekānta* in this case, is denied, then this is a generalized position. The only way to counter it would be to find a counter-example, that is, an absolute, unconditionally applicable, totally unambiguous and categorically assertible predicate, or a set of such predicates, without giving in to some dogma or having some unsuspected and unrecognized presupposition. The Jainas believe that this cannot be found. Hence *anekānta*.

Haribhadra and other Jaina philosophers have argued that we do not often realize, although we implicitly believe, that application of any predi-

cate is guided by the consideration of some particular *sense* or criterion (excessive familiarity with the criterion or sense makes it almost invisible, so to say). This is not exactly the Fregean *Sinn*. In the Indian context, there is a well-entrenched tradition of talking about the 'basis' or the 'criterion' for the application of a predicate or a term. This can be called the *nimitta* theory (the 'basis' or 'criterion' theory). A predicate can be truly applied to something x in virtue of a particular or a specific basis. The philosopher, when he emphasizes the particularity or specificity of such a basis, indirectly and implicitly commits himself to the possibility of denying that predicate (i.e. of applying the contradictory predicate) to the same thing, x, in virtue of a different basis or criterion. Haribhadra says (p. 44):

> (The Opponent says:) The lack of existence in virtue of being a watery substance, etc., belongs to a particular earth-substance, a pot; however, this is because the locus of non-existence of something cannot be a fiction. We admit therefore that it is the particularity of the earth-substance, the pot, that excludes the possibility of its being existent as a water-substance (this does not amount to admitting the co-presence of existence and non-existence in one locus).
>
> (The Jaina answer:) Oh, how great is the confusion! By your own words, you have stated the *anekānta*, but you do not even recognize it yourself! Existence in virtue of being an earth-substance itself specifies its non-existence in virtue of being a water-substance (you admit this). But you cannot admit that the thing has both natures, existence and non-existence. This is a strange illusion! No object (or thing) can be specified without recourse to the double nature belonging there, presence of its own existence in it, and absence from it, the existence of the other.

The general point of the Jainas seems to be this. Any predicate acts as a qualifier of the subject and also a distinguisher. That is, its application not only refers to or, in the old Millian sense, connotes, a property that is present in the subject, but also indicates another set of properties that are *not* present in it at all. In fact, insistence, that is, absolute insistence, on the presence of a property (an essential property) in a subject, lands us invariably into making a negative claim at the same time, absence of a contradictory property, or a set of contrary properties from the same subject-locus.

At this stage, the opponent might say, with some justification, that the conclusion reached after such a great deal of arguing tends to be trivial and banal. All that we have been persuaded to admit is this. Existence can be affirmed of a thing, x, in virtue of our fixing certain determinants in a certain way, and if the contrary or contradictory determinants are considered, existence may be denied of that very thing. This is parallel to assigning the truth-value to a proposition when all the indexical elements in it are made explicit or fixed, and being ready to accept the opposite evaluation if some

of their indexicals are differently fixed or stated. Realists or believers in bi-valence (as Michael Dummett has put it) would rather have the proposition free from any ambiguities due to the indexical elements—an eternal sentence (of the kind W.V. Quine talked about) or a thought or *Gedanke* (of the Fregean kind)—such that it would have a value, truth or falsity—eternally fixed. However, the Jainas can reply the charge of banality, by putting forward the point that it is exactly such possibilities which are in doubt. In other words, they deny that we can, without impunity, talk about the possibility of clearly and intelligibly stating such propositions, such eternal sentences, or expressing such thoughts. We may assume that a proposition has an eternally fixed truth-value, but it is not absolutely clear to us what kind of a proposition would that be. For it remains open to us to discover some hidden, unsuspected determinants that would force us to withdraw our assent to it.

V

A more serious criticism of Jainism is that if the senses are changed, and if the indexicals are differently interpreted, we get a new and different proposition entirely, and hence the result would not be affirmation and denial jointly of the same proposition. If this is conceded then the main doctrine of Jainism is lost. It is not truly an *anekānta*, which requires the *mixing* of the opposite values. This critique, serious as it is, can also be answered. This will lead us to a discussion of *saptabhaṅgī*.

The philosophical motivation of the Jainas is to emphasize not only the different facets of reality, not only the different *senses* in which a proposition can be true or false, not only the different determinants which make a proposition true or false, but also the contradictory and opposite sides of the *same* reality, the dual (contradictory) evaluation of the same proposition, and the challenge that it offers to the doctrine of bi-valence realism.

Let us talk in terms of truth predicates. The standard theory is bi-valence, i.e. two possible valuations of a given proposition, true or false. The first step taken by the Jainas in this context is to argue that there may be cases where joint application of these two predicates, true and false, would be possible. That is, given certain conditions, a proposition may be either (1) true or (2) false or (3) both true and false. If there are conditions under which it is true and there are other conditions under which it is false, then we can take both sets of these conditions together and say that given these, it is both. This does not mean, however, the rejection of the law of contradiction. If anything, this requires only non-compliance with another law of the bi-valence logic, that of the excluded middle (the excluded third). It requires that between the values true and false, there is no third alternative. The law of non-contradiction requires that a proposition and its contradictory be not true together. This keeps the possibility of their being false

together open. Only the law of excluded middle can eliminate such a possibility. This is at least one of the standard interpretations of the so-called two laws of bi-valence logic. In a non-bi-valence logic, in a multiple-valued logic, the law of contradiction is not flouted, although it disregards the excluded third. The Jainas however disregard the mutual exclusion of yes and no, and argue, in addition, in favour of their combinability in answer to a given question. We have shown above how such opposite evaluations of the same proposition can be made compatible and hence combinable.

It is the sameness of the proposition or the propositional identity that is open to question here. If the change of determinants of point of view, of the indexical element, introduces a different proposition, the change of truth-values from 'true' to 'false' would not be significant enough. However, we may claim that the proposition, whatever that is, remains the same and that it has both values, 'true' and 'false', depending upon other considerations. This would still be a non-significant critique of the classical standard logic of bi-valence. The Jainas therefore go further, in order to be true to their doctrine of 'precarious' evaluation (*ākulavāda*), and posit a separate and non-composite value called '*avaktavya*' ('inexpressible'), side by side with 'true' and 'false'. I shall presently comment on the nature of this particular evaluation. First, let us note how the Jainas get their *seven* types (ways) of propositional evaluation. If we allow combinability of values, and if we have three basic evaluative predicates (truth-values?), 'true', 'false' and 'inexpressible' (corresponding to 'yes', 'no' and 'not expressible by such yes or no'), then we have seven and only seven alternatives. Writing '+', '−' and '0' for the three values respectively:

$$+,\ -,\ +-,\ 0,\ 0^{+},\ 0^{-},\ 0^{+-}.$$

For proper mathematical symmetry, we may also write:

$$+,\ -,\ 0,\ +-,\ {}^{+}0,\ {}^{-}0,\ 0^{+-}$$

This is following the principle of combination of three basic elements, taking one at a time, two at a time and all three. The earlier arrangement reflects the historical development of the ideas. Hence, in most texts, we find the earlier order.

The 'Inexpressible' as a truth-like predicate of a proposition has been explained as follows: It is definitely distinct from the predicate 'both true and false'. For the latter is only a combination of the first two predicates. It is yielded by the idea of the combinability of values or even predicates that are mutually contradictory. Under certain interpretations, such a combined evaluation of the proposition may be allowed without constraining our intuitive and standard understanding of a contradiction and consistency. 'It is raining' can be said to be both true and false under varying circumstances. However, the direct and unequivocal challenge to the notion of contradiction in standard logic comes when it is claimed that the same proposition

is both true and false at the same time in the same sense. This is exactly accomplished by the introduction of the third value—'Inexpressible', which can be rendered also as paradoxical. The support of such an interpretation of the 'Inexpressible' is well founded in the Jaina texts. Samantabhadra and Vidyânanda both explain the difference between the 'true and false' and the 'Inexpressible' as follows. The former consists in the *gradual* (*kramārpaṇa*) assigning of the truth-values, true and false, while the latter is joint and simultaneous ('in the same breath') assigning of such contradictory values (cf. *sahārpaṇa*). One pat suggestion is that the predicate is called 'Inexpressible' because in this case we are constrained to say both 'true' and 'false' in the same breath. Something like 'true-false' or 'yes-no' would have been better, but since these are only artificial words, and there are no natural-language-words to convey the concept that directly and unambiguously flouts non-contradiction, the Jainas have devised this new term 'Inexpressible' to do the job—a new evaluative predicate, non-composite in character, like 'true' and 'false'.

This metalinguistic predicate, 'Inexpressible', has been acknowledged as a viable semantic concept in the discussion of logical and semantical paradoxes in modern times. Nowadays, some logicians even talk about 'para-consistent' logics, where a value like 'both true and false simultaneously' is acknowledged as being applicable to paradoxical propositions such as 'This sentence is false' or 'I am lying'. The third value is alternatively called 'paradoxical' or 'indeterminate' (this is to be distinguished from 'neither true nor false', which is also called 'indeterminate'; see Priest, 1979). With a little ingenuity, one can construct the matrices for Negation, Conjunction, Alternation, etc. for the system. The Jainas however do not do it.

I shall now emphasize the significant difference between the philosophical motivations of the Jainas and those modern logicians who develop multiple-valued logics or para-consistent logics. First, the logicians assign truth to the members of a certain set of propositions, falsity to another set and the third value, paradoxicality, to the problem set, i.e. the set of propositions that reveal the various versions of the liar paradox and other paradoxes. The Jainas, on the other hand, believe that each proposition, at least each metaphysical proposition, has the value 'Inexpressible' (in addition to having other values, true, false etc.). That is, there is some interpretation or some point of view, under which the given proposition would be undecidable so far as its truth or falsity is concerned, and hence could be evaluated as 'Inexpressible'. Likewise, the same proposition, under another interpretation, could be evaluated 'true', and under still another interpretation, 'false'.

Second, my reference to the non-bi-valence logic or para-consistent logic, in connection with Jainism, should not be over-emphasized. I have already noted that Jaina logicians did not develop, unlike the modern logicians, truth matrices for Negation, Conjunction, etc. It would be difficult, if not totally impossible, to find intuitive interpretations of such matrices, if one

were to develop them in any case. The only point which I wanted to emphasize here, is to show that the Jaina notion of the 'Inexpressible', or notion of *anekānta* in the broader perspective, is not an unintelligible or irrational concept. Although the usual law of non-contradiction, which is by itself a very nebulous and vague concept, is flouted, the Jainas do not land us in the realm of illogic or irrationality.

Last, but not the least, the Jainas in fact set the limit to our usual understanding of the law of non-contradiction. There are so many determinants and indexicals for the successful application of any predicate that the proper and strict formulation of the ways by which this can be contradicted (or the contradictory predicate can be applied to the same subject) will always outrun the linguistic devices at our disposal. The point may be stated in another way. The notion of human rationality is not fully exhausted by our comprehension of, and the insistence upon, the law of non-contradiction. Rational understanding is possible of the Jaina position in metaphysics. In fact, one can say that the Jaina *anekānta* is a meta-metaphysical position, since it considers all metaphysical positions to be spoiled by the inherent paradoxicality of our intellect. Thus, it is a position about the metaphysical positions of other schools. It is, therefore, not surprising that they were concerned with the evaluation of propositions, with the general principle of such evaluation. In this way, their view rightly impinged upon the notions of semantics and problems with semantical paradoxes. And above all, the Jainas were non-dogmatic, although they were dogmatic about non-dogmatism. Their main argument was intended to show the multi-faceted nature of reality as well as its ever elusive character such that whatever is revealed to any observer at any given point of time and at any given place, would be only partially and conditionally right, ready to be falsified by a different revealation to a different observer at a different place and time. The Jainas think that in our theoretical search for understanding reality, this point can hardly be overstated.

SANSKRIT PHILOSOPHY OF LANGUAGE

J. F. STAAL

In memory of Louis Renou

Long before the modern languages of South Asia began to develop, a tradition of linguistic studies originated in areas of what is now India and Pakistan and what will, on account of a certain unity of traditional culture, be referred to as "India". While it is increasingly becoming known that it was in India that the science of linguistics originated and developed into an impressive tradition, India also continues to be regarded, especially in non-professional circles, as a country devoted to philosophy. An at times almost excessive preoccupation with language on the one hand, and with philosophy on the other, may indeed be regarded as a characteristic of Indian civilization. Since instances of cross-communication and cross-fertilization between these two trends have never been rare on the subcontinent, their confluence in the linguistic speculations of what could be called the Indian philosophy of language should be a rewarding subject for study. Recent research continues to justify this expectation. Because the Indian authors in this field wrote almost exclusively in Sanskrit and confined their attention to Sanskrit as the only object-language worthy of study and speculation, the philosophies of language here considered may be referred to as "Sanskrit philosophy of language".

The term "Sanskrit philosophy of language", thus loosely introduced, may still denote a variety of topics. Taking it in a rather narrow sense, it could be thought of as referring to the views of the Sanskrit grammarians, in particular of Pāṇini's school, concerning semantics, the methodology of linguistics and the nature of language. Such views are found in some of the grammatical works, along with more specific descriptions of structures of Sanskrit. The earliest comprehensive source for discussions of this sort is Patañjali's *Mahābhāṣya* (second or first century B.C.: Renou, 1969, 489), and the most celebrated work in the grammatico-philosophical tradition which is primarily devoted to the philosophy of language is Bhartṛhari's *Vākyapadīya* (fifth century A.D.: Biardeau 1964a, 257). It may be noted that Bhartṛhari also commented on portions of the *Mahābhāṣya*, and that the *Vākyapadīya* should be understood against the background of both grammar and philosophy. There is every reason, on the other hand, to regard the *Mahābhāṣya* as an important work

not only for grammar, but also for logic, methodology and philosophy (despite Frauwallner 1960, Scharfe 1961; cf. Biardeau 1964a, 31 *note*; Staal 1963c, 1967, 44-5).

The expression "Sanskrit philosophy of language" may also be taken in a wider sense and may then be thought of as referring to the various views on the nature of language put forward by Indian philosophers, whether or not directly influenced by the Sanskrit grammarians. Though almost all Indian philosophers — whether Hindu, Buddhist or Jain — devoted some attention to language, and most of the commentators evince familiarity with at least some rules of Pāṇini, language was a more or less basic topic only for the Hindu systems of Mīmāṃsā and Nyāya, and important, though not pivotal, for the Hindu Vedānta and for similar developments in Buddhism.

In the present survey, the Sanskrit philosophy of language will be taken mainly in its wider sense. The survey will not aim at comprehensiveness, for the subject is only beginning to be explored. Accordingly, some specific topics will be selected from various sources, representing the main approaches. Both before and after 1947, these approaches have been dealt with in publications primarily devoted to other topics. Monographs dealing exclusively with the philosophy of language (e.g., Chakravarti 1930 and 1933) and also articles with similar aims (e.g., Liebich 1923 and Strauss 1927) used to be rather rare. General histories of Indian philosophy touched upon these subjects under different headings, without attempting to place them in a proper perspective. S. N. Dasgupta, author of the most comprehensive history, announced that he would treat the philosophy of grammar in a later volume (Dasgupta 1940, ix); but unfortunately he died before he could carry out this task. With particular reference to Indian semantics, Emeneau could declare in 1955: "(in India) ... much was thought and written on the subject. Of this the West is for all practical linguistic purposes innocent. The Hindu treatises are in a difficult style and few in the West will be qualified to deal with them, as Sanskritists, philosophers, and linguistic scholars. Yet the results are likely to be worth the effort; it is a subject that can be recommended to aspirants" (Emeneau 1955, 151).

A few years later Tucci devoted a chapter of his history of Indian philosophy to "La parola" (Tucci 1957, 529-46). Recent years have shown a considerable increase in interest, which is undoubtedly due both to the growing importance of Western linguistics and to the interest of contemporary Western philosophy in problems of language and of linguistic analysis. Recent monographs in the field are Ruegg (1959), Sastri (1959), Bhattacharya (1962), Pandeya (1963), Kunjunni Raja (1963) and Biardeau (1964a). While some of these rarely refer to other recent contributions, others have benefited from the relatively numerous articles that appeared since Brough (1951). It must at the same time be stressed that many fundamental problems, both conceptual and historical, still await a satisfactory solution, while some topics that may turn out to be basic have hardly been touched upon.

The various approaches, theories, and doctrines that will here be referred to are

interconnected in many ways. They sometimes developed side by side and are therefore not amenable to a purely chronological treatment. They will be dealt with here under the following headings: *1*. Methodological principles of the Sanskrit grammarians. *2*. Syntax and semantics at the time of the Sanskrit grammarians. *3*. Mīmāṃsā theories of language. *4*. Buddhist views on meaning and the nature of language. *5*. Bhartṛhari's philosophy of language. *6*. Vedānta and related views on language. *7*. Nyāya-Vaiśeṣika doctrines on language and the logical analysis of sentences.

1. METHODOLOGICAL PRINCIPLES OF THE SANSKRIT GRAMMARIANS

Many of the techniques of the Sanskrit grammarians are strictly confined to specific problems of grammatical description. Their use and background has been the subject of ample discussion. The key concepts appearing in these discussions have been studied in the third chapter of Renou 1940 (76-141: "Les procédés d'interprétation chez les grammairiens sanskrits"). The main terms are also explained in the grammatical dictionaries of Renou (1957) and Abhyankar (1961), and, less comprehensively, in Appendix *F* of Āpte's *Sanskrit-English dictionary* (1959, III, 77-112: "Grammatical concordance"). A detailed analysis of some methods as applied to a particular topic is given in Shefts (1961; cf. Staal 1963b). Logical methods used by Patañjali are discussed by Scharfe (1961; cf. Staal 1963c). Though a distinction ought to be made between Pāṇini's use of certain methods, Patañjali's elucidations and the later developments, this is hardly taken into account in the present survey which is confined to some of the topics with a general methodological significance. Many of these topics figured already in the *vārttikas* of Patañjali's predecessor Kātyāyana (Renou 1969, 488). They were lucidly discussed in the *Paspaśā* or Introduction to the *Mahābhāṣya*, now readily accessible in a separate annotated translation (Chatterji 1957[2]).

The most important concept of Pāṇini's grammar is that of *sūtra* 'rule'. The *Aṣṭādhyāyī* is not a catalogue of facts about Sanskrit, but a set of rules which expresses the grammatical regularities of the language. We would nowadays say that a finite number of rules is required in order to account for infinitely many expressions. Patañjali is very explicit in this respect at the beginning of the *Paspaśā* in a passage that deserves to be quoted in full: "Now if grammatical expressions (*śabda*) are taught, must this be done by the recitation of each particular word (*pada*) for the understanding of grammatical expressions — must, e.g., the grammatical expressions *gauḥ* 'cow', *aśvaḥ* 'horse', *puruṣaḥ* 'man', *hastī* 'elephant', *śakuniḥ* 'kite', *mṛgaḥ* 'deer', *brāhmaṇaḥ* be recited? No, says the author, this recitation of each particular word is not a means for the understanding of grammatical expressions. For there is the following tradition: Bṛhaspati addressed Indra during a thousand divine years going over the grammatical expressions by speaking each particular word, and still he did

not attain the end. With Bṛhaspati as the instructor, Indra as the student and a thousand divine years as the period of study, the end could not be attained, so what of the present day when he who lives a life in full lives at most a hundred years? ... Therefore the recitation of each particular word is not a means for the understanding of grammatical expressions. — But then how are grammatical expressions understood? Some work containing general and particular rules has to be composed ...".[1]

Rules were also given in the *Prātiśākhya* literature, which deals specifically with the relation between each particular Vedic *saṃhitā* ("continuous[ly recited]") text (in which the *sandhi* rules are applied) and the corresponding *pada* ("word (for word)") text (in which the *sandhi* combinations are dissolved); more generally, this literature may be said to deal with Vedic phonology. In the *Ṛkprātiśākhya* (13.31: Renou 1957, 483), itself referred to as *sūtra* (Renou 1963, 201 *note* 9), rules are referred to by means of the term *lakṣaṇa*. In grammar in general, *lakṣaṇa* is based upon *lakṣya* 'object of the rule', i.e., the object-language, since the rules must be in accordance with everyday usage (*loka*). The rules then have a general character but must conform to the empirical facts of usage.

The concepts *sūtra*, *lakṣaṇa/lakṣya* and *loka* have increasingly come to play a fundamental role. As for *sūtra*-rules and the elucidations they necessitate in the form of expansions (*vṛtti*), explanations (*vārttikā*), interpretations (*vyākhyāna*) and commentaries (*bhāṣya*), Renou has provided a survey which ranges from the ritual and grammatical to the legal and philosophical rules (Renou 1963). The terms *lakṣaṇa* and *lakṣya* (which in musical texts, for example, came to denote theory and practice, respectively), refer to the distinction made in Indian logic between the *definiens* and the *definiendum*, respectively (Staal 1961). For *loka* and *sarvaloka* no special study seems to be available. It is however clear from the use the earliest grammarians made of these terms, that they did not teach how Sanskrit ought to be spoken, but how it was spoken. Originally, grammar was a descriptive, not a prescriptive science (that this changed in the course of the centuries is not surprising in view of Pāṇini's authority). That grammatical descriptions are based upon forms everybody has at his disposal is again illustrated by Patañjali in his characteristic manner: "He who wants pots goes to the shop of a potter, but he who wants words does not go to the shop of a grammarian" (Staal 1963a, 25 corresponding to 1965c, 109). Later philosophers argued from common usage (*sarvaloka*) in a similar manner as the British linguistic or "ordinary language" philosophers. Śaṅkara, for example, seeks to establish the continuity of personality against the Buddhist thesis of momentariness

[1] *athaitasmiñ śabdopadeśe sati kiṃ śabdānāṃ pratipattau pratipadapāṭhaḥ kartavyaḥ / gaur aśvaḥ puruṣo hastī śakunir mṛgo brāhmaṇa ity evam ādayaḥ śabdāḥ paṭhitavyāḥ / nety āha / anabhyupāya eṣa śabdānāṃ pratipattau pratipadapāṭhaḥ / evaṃ hi śrūyate / bṛhaspatir indrāya divyaṃ varṣasahasraṃ pratipadoktānāṃ śabdānāṃ śabdapārāyaṇaṃ provāca nāntaṃ jagāma / bṛhaspatiś ca pravaktendraś cādhyetā divyaṃ varṣasahasram adhyayanakālo na cāntaṃ jagāma / kiṃ punar adyatve yaḥ sarvathā ciraṃ jīvati sa varṣaśataṃ jīvati ... tasmād anabhyupāyaḥ śabdānāṃ pratipattau pratipadapāṭhaḥ / kathaṃ tarhīme śabdāḥ pratipattavyāḥ / kiṃcitsāmānyaviśeṣaval lakṣaṇaṃ pravartyam* ... (ed. Kielhorn 5.23-6.3).

by explicitly invoking *sarvaloka* and applying this as follows: "we observe people saying '*I* remember to-day what *I* saw (yesterday)', but never '*I* remember to-day what *he* saw yesterday'" (*Brahmasūtrabhāṣya* 2.2.25; Staal 1966e).

What did the grammatical rules effectuate in the first place? Pāṇini's answer is: *ādeśa* "substitution". The rules can therefore, in principle, be written in the form:

$$a \rightarrow b, \qquad (1)$$

where *a* denotes the substituendum (*sthānin*) and *b* the substitute (also called *ādeśa*). However, since context-restrictions have often to be taken into account, the majority of rules is written in the form:

$$c\ [a \rightarrow b]\ d \qquad (2)$$

or:

$$c\ a\ d \rightarrow c\ b\ d, \qquad (3)$$

where *c* and *d* need not be null (Staal 1965a cf. Cardona 1965 and Staal, 1967, 27 *note* 9). Pāṇini expresses this by using the cases meta-linguistically. The *Prātiśākhya* literature sometimes emphasized *vikāra* 'modification' or *pariṇāma* 'transformation'. For the Pāṇinīyas however, *a* does not become *b* and words do not change. This resulted in synchronic analysis, but was based upon the conviction that words are eternal (*nitya*) and not, for example, upon the methodological assumption that diachronic analysis presupposes synchronic analysis. Accordingly, preference is given to interpretations of the form (3) as distinct from (2). In this connexion Patañjali quotes a verse: "all (substitutes) taught by Pāṇini, the son of Dākṣī, are substitutes of entire words; for if only a portion of the word were modified, the permanence of words would not be possible"[2] (Ruegg 1959, 45). Thus, words are always *siddha* 'established' and not *sādhya* 'to be established' (Biardeau 1964a, 36 and following). In this respect the rules of grammar differ from the prescriptive rules (*vidhi*) of the Mīmāṃsā (see below, *3*). They constitute in fact an exception to the general emphasis on imperatives and subjunctives, which resulted from the requirements of Vedic exegesis, and which accounts for the fact that "the linguistic thought of philosophers in India was not so largely confined to indicative propositions as that of logicians in the west" (Brough 1953, 162). The emphasis on descriptive sentences returns in the Advaita Vedānta with its descriptive and realistic stress on knowledge based upon the object that is *siddha*, as against meditation based upon prescriptive rules (*vidhi*) and referring to what is *sādhya* (Staal 1962a, 61-63).

Of the resulting grammatical problems treated by Kātyāyana and Patañjali, some were lucidly formulated by Kielhorn: "If it is admitted that the words and their meanings are fixed and settled by common usage, it may well be asked whether the rules laid down by Pāṇini are at all necessary, and it must therefore be shown that

[2] *sarve sarvapadādeśā dākṣīputrasya pāṇineḥ / ekadeśavikāre hi nityatvaṃ nopapadyate //* (ed. Kielhorn 75.13-14).

and why they are necessary" (Kielhorn 1876 = 1965^2, 49). This is answered by Kātyāyana by declaring that grammar enjoins restrictions (*dharmaniyama*), which is discussed at length in the *Paspaśā* (Thieme 1929, 29-32; cf. Biardeau 1964a, 35-6, but see J. C. Wright in *BSOAS* 29 [1966] 169). Next Patañjali, following Kātyāyana, considers the following question (in Kielhorn's words): "If it is the object of grammar to lay down rules for the correct formation of those words which people actually use, it does not seem improper to enquire whether Pāṇini, in teaching the formation of such words as would not appear to be in use, has not laid himself open to just censure" (Kielhorn ibid). Various answers are suggested, including pointed references to the fact that "the extension for the use of words is vast"[3].

Both the formulation and the use of rules raise methodological problems. In formulating rules, the grammarians use an economy criterion (*lāghava* 'simplicity') which requires that the rules be formulated in as concise a manner as possible. The following *paribhāṣā* (see below) is often quoted in this connexion: "Grammarians rejoice over the saving of the length of half a short vowel as over the birth of a son".[4] On account of this criterion, which was widely adopted also outside the grammatical tradition (e.g., Staal 1963b), Pāṇini used special abbreviations and, often as a result of this, adopted a special ordering of the rules. The order of rules is sometimes marked by headings (*adhikāra*; cf. Renou 1955, 124-6). Among the abbreviations an important place is occupied by the indicatory sounds (*anubandha*; Pāṇini called them *it*). An example is *śap*, which indicates an *a* added to the verbal root in order to derive the present stem (both *śit* "the indicatory sound ś" and *pit* "the indicatory sound p" denote specific properties) (Shefts 1961). These indicatory sounds are metalinguistic elements (they occur, says Pāṇini, in *upadeśa* 'grammatical instruction' only), just as the technical terms of grammar; they raise typographical problems when translated into another language (Staal 1963b). The *anubandha* elements must disappear before the grammatical forms are finally derived (Pāṇini 1.3.9): in forming the present stem from the root *tud-* by adding *śap* we do not wish to derive **tudśap-* but *tuda-*. The term *anubandha* may have been adopted from the ritual term *anubandhya paśu*, denoting the sacrificial victim tied to the post and subsequently slaughtered (Abhyankar 1961, 24). Patañjali discusses the question whether it has to be assumed that the word is different when its *anubandha* has disappeared: "If it is held that the *anubandha* produces something else, the answer is, No. Why? Because of elision. The *anubandha* is here elided. When the *anubandha* is here elided it (the word) does not become something else. Just as in the following case. 'Which of these two is Devadatta's house? That where the crow is.' When the crow flies away, the house is no longer marked. Likewise here, when this *anubandha* is lost, the evidence is destroyed. But even if one knows that the *anubandha* is lost, the understanding that it was marked by it remains. Just as in the following case. 'Which of these two is Devadatta's house? That where

[3] *mahān hi śabdasya prayogaviṣayaḥ* (ed. Kielhorn 9.20).

[4] *ardhamātrālāghavena putrotsavaṃ manyante vaiyākaraṇāḥ* : *Paribhāṣenduśekhara* 122.

this crow is.' When the crow flies away and even if the house is no longer marked, one knows in consequence what was indicated" (partly quoted by Scharfe 1961, 164).[5]

The economy criterion accounts for much in the structure of Pāṇini's grammar, including the order of its rules. At first sight the order seems haphazard, since the information on particular topics may be scattered all over the grammar. Attempts to change the order have been frequent (e.g., by Bhaṭṭojī Dīkṣita in the 17th century); they are bound to fail unless it is realized that the order of rules is determined by the logical structure of the grammar. The most interesting modern studies on order belong to the thirties (Buiskool 1934 = 1939, Faddegon 1936) and have since been resumed only within a more limited framework. The problem of automation with respect to Pāṇini's rules, which presupposes that problems of order have been solved, has hardly been touched upon (Fowler 1965, but see Staal 1966c).

Apart from their formulation, the rules raise important methodological problems with regard to their use. The preceding remarks have shown that the Pāṇinīyas distinguished between object-language and metalanguage. The relevant *sūtra* (1.1.68) has been discussed by Brough (1951), who has demonstrated that the Indian grammarians distinguished very clearly (for Bhartṛhari, see Biardeau 1964a, 360-4; Gray 1968, 72-4) between use and mention. In ordinary Sanskrit, a *quoted* expression is followed by the particle *iti*, i.e., English "'---'" corresponds to Sanskrit "---*iti*". The grammarians operate, for the sake of economy, with a reversal (*viparyāsa*) of ordinary usage in this respect: since the object-language is the object of grammar, expressions without *iti* refer to their *form*, and not to their meaning. An expression "quoted", i.e., followed by *iti*, on the other hand refers to its meaning (Ojihara-Renou 1960, 120-1; Staal 1965b).

The meta-language does not only consist of artificial elements, but in addition contains the metarules (*paribhāṣā*) which circumscribe how rules have to be used. A typical *paribhāṣā* discusses the relative strength of various *sūtras* or enunciates general principles regarding the order in which *sūtras* have to be applied (discussion and applications: Birwé 1966, 15-18). Many *paribhāṣā* rules already occured in Pāṇini's grammar, but later more complete lists were constructed. The best known treatise dealing with metarules is Nāgojībhaṭṭa's *Paribhāṣenduśekhara* (18th century); it was translated by Kielhorn in 1868-74 and has been recently reprinted (1960; cf. Renou 1940, 12 *note* 1; 1956, 137-149; Rocher and Debels 1960). The consistency of Pāṇini's grammar follows from metarule 1.4.2, which states that in case of contradiction between two rules, the second rule prevails (this requires the rules to be ordered in a specific manner; for details see Birwé 1966, 51-63). The use made of

[5] *anubandho'nyatvakara iti cet tan na / kiṃ kāraṇam / lopāt / lupyate'trānubandhaḥ / lupte'trānubandhe nānyatvaṃ bhaviṣyati / tad yathā / katarad devadattasya gṛham / ado yatrāsau kāka iti / utpatite kāke naṣṭaṃ tadgṛhaṃ bhavati / evam ihāpi lupte'nubandhe naṣṭaḥ pratyayo bhavati // yady api lupyate jānāti tv asau sānubandhakasyeyaṃ saṃjñā kṛteti / tad yathā / itaratrāpi katarad devadattasya gṛham / ado yatrāsau kāka iti / utpatite kāke yady api naṣṭaṃ tadgṛhaṃ bhavaty antatas tam uddeśaṃ jānāti //* (ed. Kielhorn 84.21-85.3).

this *paribhāṣā* proves that the Sanskrit grammarians accepted the law of non-contradiction; it was subsequently formulated and adhered to in logic and in the Advaita Vedānta. The law of non-contradiction is, however, not universally adhered to, since its validity depends on the kind of negation used in its formulation (Staal 1962a; cf. 1966a). Finally, mention may be made of the very important discovery by Pāṇini (or by earlier grammarians) of "zero" (Pāṇini 1.1.60 and following). Since zero may perform many functions, various zero-morphemes are distinguished (see, e.g., Shefts 1961, 12-3). Because the discovery of zero in mathematics is also attributed to India, and because Indian culture may be characterized by its emphasis on linguistics in the way Western culture may be characterized by its emphasis on mathematics, it is tempting to assume that the mathematical zero was discovered by scholars who were already familiar with the linguistic zero (Allen 1955). Historical evidence in this respect is, however, totally lacking, and the subject does not seem to have been given the attention it deserves.

2. SYNTAX AND SEMANTICS AT THE TIME OF THE SANSKRIT GRAMMARIANS

While, strictly speaking, semantics belongs to the subject of this survey, a few remarks may be devoted to syntax, especially since the attitude of the Sanskrit grammarians in this respect is not always adequately represented. Moreover, syntax and semantics are very intimately connected as far as sentences are concerned. As may be seen from several passages already referred to, the Pāṇinīyas deal with words rather more frequently than with sentences. Sentences have however been subjected to linguistic scrutiny from the earliest times. In the *Bṛhaddevatā*, an old work which largely depends on the *Nirukta*, sentences are merely defined as collections of words (Kunjunni Raja 1963, 152). This inadequate definition has subsequently been refined (see below *7* and Matilal 1966). Kātyāyana defined the sentence as *ekatiṅ* 'what possesses one finite verb' (*vārttika* 10 ad 2.1.1; ed. Kielhorn 367.16), a definition that has been much debated.

It is often said that syntactical matters are not given much attention in Pāṇini's grammar. Among the exceptions mention is made of the treatment of nominal composition (cf. Staal 1966b). It is a fact that in the Mīmāṃsā, syntax is specifically dealt with (see below, *3.*). But the view that Pāṇini neglected syntax is not tenable. This impression may have arisen because the Sanskrit grammarians never paid much attention to word order, an important syntactical topic in some modern Western languages (e.g., English). But this merely reflects the fact that word order in Sanskrit is free, i.e., that it performs no grammatical function (Staal, 1967, Ch. IV). The grammatical relations which are expressed in sentences are indeed quite independent of word order. These relations have been treated by Pāṇini in the rules dealing with the often described, but generally misunderstood, concept of *kāraka* (for recent contributions see, e.g., Rocher 1964a, b). The indispensability of *kāraka*-relations

can only be understood if it is realized that they purport to describe the grammatical relationships which obtain between the words of a sentence — relationships which are quite different from and also independent of the arrangements of the words in a sentence. In fact, these grammatical relationships are characterized by the fact that they need not be manifest in or derivable from the order of the elements (generally: words) in their physical surface-shape. This has puzzled Western interpreters who were used to studying only the surface structure of sentences. Any deeper structure seemed to be vaguely semantic and hence suspect from a narrowly empiricist standpoint. But Pāṇini deals with just this problem of the "deeper" connections between sentences (or other expressions) which differ from each other in surface structure (for nominal compounds, see Staal 1966b, 171-2). The sentences:

kumbhān karoti 'he makes pots' (4)

and:

(*tena*) *kumbhāḥ kriyante* 'pots are made (by him)' (5)

differ not only in inflexion, but also in subject and object. But from a semantical point of view they are related in a very simple way: they express the same meaning. There are close syntactical relationships between sentences like (4) and (5), and also between them and such noun phrases as:

kumbhānāṃ kartṛ 'maker of pots' (6)

and such nominal compounds as:

kumbhakāraḥ 'pot-maker, potter'. (7)

The notion of *kāraka* is postulated in order to deal with the syntactical and semantical relations between expressions like (4)-(7); by introducing this notion, Pāṇini uncovered relations that are nowadays called transformational. In the above case the same *kāraka* relation, i.e., *karman*, is expressed by the object *kumbhān* of (4) (and accordingly by the accusative), by the subject *kumbhāḥ* of (5) (and accordingly by the nominative), by the "objective" genitive *kumbhānām* of (6) and by the first member *kumbha-* of (7).

Since it was generally assumed that he was only interested in surface morphology and phonology, it has not been realized that in the *kāraka* theory Pāṇini was concerned with sentence construction, i.e., with syntax and semantics or with what is nowadays called "deep structure". This conclusion can only be derived, however, if we correctly appreciate the system of *kāraka* relations (Kiparsky-Staal, 1969).

The *kāraka*-theory constitutes the most interesting part of the semantics of sentences dealt with by the Sanskrit grammarians: the analysis of the deep structure of sentences, which is relevant to both syntax and semantics. The semantics of individual words required separate treatment; this is a matter of lexicography. Pāṇini's grammar is indeed incomplete without the lists of words to which the grammatical rules apply. Such lists were provided in the *gaṇa* 'list' enumerations, of which two types

were in existence: the *paripūrṇagaṇa* or complete lists of words that come under the description of a particular rule; and the *ākṛtigaṇa*, which introduce a formal characteristic by means of which it is decided whether a given word comes under the description of a particular rule. The task of reconstructing these lists has recently been undertaken (Birwé 1961). The study of the more traditional dictionaries (*kośa*, *koṣa*), which had hardly been dealt with since Zachariae (1897), has recently been resumed as well (e.g., Birwé 1965, 1967). The older lexicographical works, in particular the *Nighaṇṭu* and the *Nirukta*, which primarily dealt with Vedic etymologies, have always received the attention of scholars, and continue to be treated in recent publications (e.g., Bhattacharya 1958).

While the relational concepts of subject, object, etc. are treated in the *kāraka*-theory, the major parts of speech were discussed from the *Nirukta* onwards. Its author, Yāska, mentions four parts of speech: *nāman* 'noun', *ākhyāta* 'verb', *upasarga* 'preverb' and *nipāta* 'particle' (see e.g. Brough 1952; Ruegg 1959, 24). While the followers of Gārgya adhered to the priority of the noun, the followers of Śākaṭāyana derived all nouns (or nominal stems) from verbs (or verbal roots); they were followed in this respect by the *Nirukta* and by Pāṇini (Emeneau 1955, 148 rightly emphasized that this priority is a matter of grammatical description, not of historical derivation; Ruegg 1959, 24 has misconstrued this by quoting a passage which introduces priority in a psychological sense, but this in no way affects the issue synchronic/diachronic). Nouns and verbs are defined in semantical terms by the author of the *Nirukta*: a verb is chiefly concerned with *bhāva* 'being and becoming', a noun with *sattva* 'reality' (Brough 1952, Ruegg 1959, 24, Kunjunni Raja 1957). The preverbs have independent meaning according to Gārgya, but according to Śākaṭāyana they depend on the meaning of the verb (Ruegg 1959, 25).

In conclusion we may state that semantics from the linguistic point of view has at no time been neglected: the etymological speculations regarding the Veda were in due course supplemented by the lexicological information contained in the dictionaries and by the syntactico-semantical theory of sentences summed up in the *kāraka*-theory.

In connexion with semantics some final remarks may be made about the so-called controversy of Kautsa (cf., e.g., Renou 1960, 68-75). According to Kautsa's theory the Vedic mantras were meaningless. This doctrine has a ritualist background; it does not seem to have been questioned that the recitation of mantras in the course of the ritual was effective; their meaning as ordinary utterances became redundant. The extreme form in which this thesis was defended scandalized Vedic orthodoxy; a list of counterarguments is provided, for the first time, by the *Nirukta*. These were further developed in the *Mīmāṃsāsūtra*, where Kautsa's arguments are neatly represented in the following terms (1.2.4, *sūtras* 34-8): so often the mantras appear simply absurd; they speak of things that do not exist (e.g., something with four horns, three feet, two heads and seven hands); they address inanimate objects (e.g., herbs and stones); they are self-contradictory and often redundant; there is a tradition for them

to be learnt by heart, but no corresponding teaching of their meaning; etc. Accordingly the mantras have to be accepted as strictly meaningless (cf. also Staal, 1967, 24-5, 48). These arguments are then refuted by the author of the *Mīmāṃsāsūtra*. From a semantic point of view it may be observed, that Kautsa's doctrine does not concern a language that is considered meaningless, but rather a corpus of meaningless utterances.

3. MĪMĀṂSĀ THEORIES OF LANGUAGE

The philosophers of the Mīmāṃsā were primarily interested in the Vedic ritual and in its textual base, i.e., in the corpus of utterances provided by the Vedic revelation. This marks an important difference between them and the grammarians: the latter were interested in grammatical sentences, in the first place of Sanskrit, but also, though often to a less marked extent, of the Vedic language. The distinction between sentence (*vākya*) and utterance (*uccāraṇa*) occurs in the grammatical writings as well, especially in contexts where Pāṇini's enunciations are regarded as *uccāraṇa*. It became widespread in the later logical and philosophical writings. This distinction constitutes an instance of that between type and token. This latter distinction too was recognized in logical and grammatical texts. Patañjali used it when discussing long and short phonemes in the context of his theory of *sphoṭa* (see below) (Biardeau 1964a, 368-9): "Phonemes are fixed, whether produced at high, middle or low speed. But then what causes the distinction in production? The productions are differentiated on account of the fact that the speaker enunciates more slowly or more quickly".[6]

Later such distinctions are found in various contexts and controversies. The philosopher Śaṅkara, for example, criticizes the view, that sounds cannot constitute the word since they disappear after having been pronounced, by saying: "That is not so for they are recognized as the same ... Each time the individual sounds are pronounced they are recognized. For the word *cow* pronounced twice is not understood as two different words *cow*".[7]

Ever since the Mīmāṃsā system became known it has drawn the attention of Western scholars on account of some of its more philosophical speculations concerning the nature of language. The topics discussed in this connexion include the eternality of words and the question whether words denote universals or particulars, both dealt with in the *Mahābhāṣya* as well. Apart from such discussions, the Mīmāṃsā also evolved a very original theory of language, which may constitute a uniquely Indian contribution. On the basis of this theory, discussions arose regarding the problem of

[6] *avasthitā varṇā drutamadhyamavilambitāsu / kiṃkṛtas tarhi vṛttiviśeṣaḥ / vaktuś cirāciravacanād vṛttayo viśiṣyante /* (ed. Kielhorn 181.14-5).

[7] *tan na ta eveti pratyabhijñānāt ... varṇavyaktaya eva ... pratyuccāraṇam pratyabhijñāyante / dvir gośabda uccārita iti hi pratipattir na tu dvau gośabdāv iti* (*Brahmasūtrabhāṣya* 1.3.28, ed. Nirṇayasāgara, Bombay 1934, 256).

the relation between words and sentences. Whereas the topics first mentioned have been discussed in the past (e.g., Strauss 1927, 125-51; Jha 1942, 68-76; etc.) and continue to be dealt with in recent publications (e.g., Biardeau 1964a, 155-203), the particular Mīmāṃsā theory of language mentioned last was described in detail, practically for the first time, in Edgerton (1928, 1929), which does not appear to have later attracted the attention it deserves. The theories on the relationship between words and sentences have been repeatedly discussed in recent publications (e.g., Sastri 1959, 172-217; Bhattacharya 1962, 158-187; Kunjunni Raja 1963, 193-213). Each of these topics requires some elucidation.

The Mīmāṃsā philosophers accepted the Veda as *apauruṣeya* 'not of human origin'; accordingly, they defended the thesis that words are eternal. This thesis is, in fact, like the problem of universals, related to the distinction between type and token. It is argued (circularly, no doubt) in its support that, if each word-utterance were distinct, the utterances could not be recognized as expressing the same word. Mere similarity between the utterances, moreover, will not do. Hearers perceive a present word-utterance as identical with a remembered one; and so the underlying word is eternal. Utterances of words are manifestations of words; they do not produce or create words. Similarly, the meaning of words is eternal, and so is the relation between words and meaning.

Patañjali devoted a long discussion to the question whether words denote particulars or universals. According to Vyāḍi (see e.g. Thieme 1956, 18), the meaning of a word is an individual thing (*dravya*). Patañjali did not accept any view as final, and this would probably be impossible at such level of generality. The terms which in this connection express universality, are *ākṛti* 'specific form', *jāti* 'class' and *sāmānya* 'common character(istic)'. These terms have been frequently discussed, with reference to various texts and systems. With regard to the *Mahābhāṣya* they were most recently studied by Biardeau (1964a, 44-61, from where the translations of the three terms above have been taken; cf. also Sreekrishna Sarma 1957; Thieme 1956, 7-8). The Mīmāṃsā philosophers rejected the view that words denote particulars and assumed that they refer to the *ākṛti* (Biardeau 1964a, 162-77). This is a natural consequence of their belief in the eternality of words. Murti (1963, xiii) has rightly observed that the theory of the eternality of words is the Indian counterpart of the doctrine of Ideas.

The Mīmāṃsā theory of language is best understood against the background of the principal objective of this system, which is to interpret the Vedic ritual from and with the help of the Vedic texts. Therefore, like Kautsa's theory and the theories of other ritualists, it is in origin not so much a theory of language as a theory concerning the corpus of Vedic utterances. According to Mīmāṃsā (see Edgerton 1928, 1929) the core of the Veda is the collection of injunctions (*vidhi*) to perform specific ritual acts, such as sacrifice. The injunction finds verbal expression principally in an optative verb-form such as *yajeta* 'he shall sacrifice'. This form is divided into the root *yaj*(*i*) and the ending (*e*)*ta*. These two elements are not of equal importance,

and yet they are intimately connected; so one must be the principal and one the subordinate element. Since it is through the ending that a word is brought into relationship with other words, the ending cannot depend on the root. In fact the reverse holds: the root depends on the ending. The ending is therefore the heart of the injunctive verb, and hence the heart of the heart of the whole Veda; it expresses what is called *bhāvanā* 'efficient-force'. On closer inspection the ending is seen to express two things: general verbality (*ākhyātatva*) and specific optativeness (*liṅtva*) (note that the term *ākhyāta* 'verb' was taken from ordinary language; for the technical notion of optative no general word was available, so that Pāṇini's artificial term *liṅ* was adopted). The former is expressed by any verbal ending, the latter by optative endings only. The two corresponding efficient-forces are *ārthī bhāvanā* 'efficient-force of the end or goal' and *śābdī bhāvanā* 'efficient-force of the word', respectively. For any verb denotes an action, whereas only the optative is prompted by the Vedic injunction. The former is subordinate to the latter, which therefore is "the ultimate of ultimates, the peg on which the whole system of Vedic duty hangs" (Edgerton 1928, 176).

Just as the optativeness expresses the principal force of the verb-form, the verb-form expresses the principal force of the sentence. Though other words may occur in a sentence, these are essentially complements to the verb, as in:

yajeta svargakāmaḥ 'who desires heaven shall sacrifice'. (8)

In this sentence the *ārthī bhāvanā* has as its end *svargaḥ* 'heaven' and as its means the root-meaning of the verb *yaj*(*i*) 'sacrifice'. Accordingly (8) means:

yāgena svargaṃ bhāvayet 'by sacrifice he shall effect (attain) heaven' (9)

(Edgerton 1929, 7). (Note that contemporary semantic theory is only beginning to describe or explain the semantic relationship between such sentences as (8) and (9)),

This interesting theory has many unforeseen consequences. Mention may be made of the theory of negation as applied to *vidhi* 'injunction'. This is most easily explained when formalization is resorted to (Staal 1962a, b). Let injunctions be expressed by prefixing a modal operator N (expressing optativeness) to indicative sentences written as F(x) (where F expresses verbality). This symbolism clearly represents the distinction between the two kinds of *bhāvanā*. For example, if F(a) stands for "the knot is tied", N(F(a)) will stand for "the knot should be tied" or "tie the knot!". Various negations can now be applied; for the sake of convenience, all will be expressed by means of a single negation symbol, i.e. $\sim$. The negation of the injunction itself, which negates the optativeness and is equivalent to a prohibition (*niṣedha*), may now be written $\sim$ N(F(a)), defined as ($\sim$N)(F(a)) "the knot should not be tied" or "don't tie the knot". Two more negations are possible. Both are varieties of what is called *paryudāsa*, and in the first, the verb is negated: (i) N($\sim$ F(a)), defined as N(($\sim$F)(a)) "the knot should be untied" or "untie the knot"; in the second, the term *a* is negated: (ij) N(F($\sim$a)) "a not-knot should be tied", which may be interpreted as:

"another knot should be tied" or "tie another knot!". The difference may be described by saying that these negations, which may be distinct in kind, are at any rate distinct in scope. Analogous distinctions are made in grammar and in logic, but since these refer mainly to indicative sentences of the form F (x), there are only two possibilities left. An interesting consequence of this theory of negation, which appears to be essentially richer than the Aristotelian theory of negation that is at the background of modern Western theories, is that the logical law of non-contradiction need not be true for each of these types of negation. It is intuitively clear that it does in fact not hold for the second *paryudāsa* negation: one knot may be tied as well as another. In the final analysis this, at first sight curious, state of affairs may be explained by observing, that the law of non-contradiction determines what *we* are used to referring to as negation (cf. Staal 1966a, Appendix).

The Mīmāṃsā theories on the semantic relationship between words and sentences have been studied from different points of view and have also attracted the attention of modern semanticists (e.g., Ziff 1960, 151-2). The two most well-known doctrines are those adhered to by the two main schools of the Mīmāṃsā: for the followers of Prabhākara Guru the meaning of a sentence arises directly from the collection of its words (*anvitābhidhāna*); accordingly words convey no meaning except in the context of a sentence. For the followers of Kumārila Bhaṭṭa, on the other hand, the meaning of a sentence arises indirectly through the retaining of the meanings of the individual words that comprise it (*abhihitānvaya*) (Kunjunni Raja 1963, 193-4). The first view is clearly in accordance with the basic Mīmāṃsā standpoint, according to which the Veda consists of injunctions which do not refer to a reality which is *siddha* 'established', but point forward to a reality which is *sādhya* 'to be established' (cf. Biardeau 1956, Introduction). In that case an injunction as a whole pertains to an end or goal, whereas there is no need for its individual words to have any particular meaning by themselves. The *anvitābhidhāna* doctrine, which could be described as an extreme form of "syncategorematicism", is directly related to the theory of *bhāvanā* or efficient-force. For in the latter theory it had been argued that endings are the principal elements of words because it is through them that words are related to each other. But this argument is valid only if the relationship between words in a sentence is more basic than the words themselves. — It is not known whether the Mīmāṃsakas related these speculations to the *kāraka*-theory, with which, as scholars writing in Sanskrit, they were undoubtedly familiar; there clearly are interesting similarities.

The followers of Prabhākara Guru elucidated their theory by drawing attention to the process by means of which the meaning of words is learned. A child who hears the sentences *gām ānaya* 'bring the cow' and *aśvam ānaya* 'bring the horse', understands in each case the meaning of the entire expression from the context or situation. Only by comparing the distribution he understands that the expression *ānaya* common to both must mean the command to bring, and that the terms *gām* and *aśvam* refer to the two different animals (Kunjunni Raja 1963, 195-6). — It may in addition be noted that the *anvitābhidhāna* theory, which can account for the results

of (verbal) meditation as easily as for the results of ritual activity, is less appropriate in a philosophical context where much attention is devoted to epistemology. For in any such theory, knowledge is expressed by declaratives which refer to established things, not to things-to-be-established. The Advaita Vedānta philosopher Śaṅkara indeed stresses that meditation depends on man, whereas knowledge depends on things. Meditation pertains to what is *sādhya*, but knowledge pertains to what is *siddha* (Staal 1962a, 62-3). Since according to him some of the Vedic utterances deal with what is *siddha* (e.g., the much discussed statement "the earth consists of seven islands"[8]), the philosophers of the Advaita Vedānta cannot accept the view that the meaning of sentences arises directly from the collection of their words; they adopt the alternative view, i.e., *abhihitānvaya* (cf. Biardeau 1956, Introduction).

It seems likely that not only the works of the Sanskrit grammarians, but also the philosophical texts of the Mīmāṃsā, when studied from a linguistic, semantic and logical point of view, will yield many more interesting theories, arguments and pieces of analysis, than may be imagined from the few doctrines referred to in this survey, or even from the relatively numerous theories that have already been made accessible in recent publications. As regards Mīmāṃsā it is more and more realized that earlier Western accounts were rather one-sided on account of the philosophical or epistemological bias of their authors. Kunjunni Raja's work, for example, shows how metaphysical presuppositions are quite irrelevant to many specific theories; Biardeau's work, on the other hand, stresses how specific doctrines may be construed as dependent on metaphysical backgrounds. It is quite obvious, in the context of this approach, that metaphysical prejudices may be Indian as well as Western.

In conclusion of this section a principle of word interpretation already mentioned by Edgerton may be briefly referred to: this principle says that, if we wish to establish the meaning of a word, the conventional, established meaning (*rūḍhi*) is stronger than the meaning based on analysis and etymological derivation (*yoga*) (e.g., Edgerton 1928, 172-3). Later Mīmāṃsakas and logicians distinguished four classes of words in accordance with the way their meaning is determined: *yaugika* 'derivative' (e.g., *pācaka* 'cook' from *pac-* 'to cook'); *rūḍha* 'conventional' (e.g., *rathakāra*, literally 'chariot-maker', but actually used to refer to members of a particular caste); *yogarūḍha* 'both derivative and conventional' (e.g., *paṅkaja*, lit. 'what grows in the mud', but especially used to denote 'lotus'); and *yaugikarūḍha* 'either derivative or conventional' (e.g., *aśvagandhā*, either lit. 'having the smell of a horse' or used as a name for a particular plant which — as implied by this classification — does not smell like a horse) (Kunjunni Raja 1963, 59-63). These distinctions, though far from precise, are at any rate less vague than the familiar Wittgensteinian slogan that the meaning of a word lies in its use.

[8] *saptadvīpā vasumatī* (quoted e.g. *Brahmasūtrabhāṣya* 1.1.4, ed. Nirṇayasāgara 69).

4. BUDDHIST VIEWS ON MEANING AND THE NATURE OF LANGUAGE

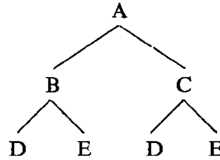
The later Mīmāṃsā doctrines owed much of their logical force and presentation, though not their content, to the theories of their Buddhist adversaries. While these later Buddhist views on language, which were expressed in Sanskrit, have been studied relatively often, the earlier Buddhist views, which will be referred to first, have only recently been treated from the point of view of the philosophy of language (Jayatilleke 1963). At first sight, these earlier views strike us as altogether different from the theories of the Hindu grammarians and Mīmāṃsakas; it should be borne in mind that this may be partly explained by the fact that the earliest Buddhist writings were not in Sanskrit, but in Pali. It should also be noted that these early Buddhist doctrines did not arise in the Hindu scholarly or sacerdotal milieu, which created the conditions under which linguistic speculation and Mīmāṃsā could develop. Some Buddhist writings in fact represent the orthodox Brahman as a *veyyākaraṇa* (Skt. *vaiyākaraṇa*) 'grammarian' (Jayatilleke 1963, 312).

The early Buddhist texts are given to classification, like many early Hindu writings, and are characterized by a fair amount of (probably religiously effective) repetition. In these early writings much attention was paid to a classification of questions. The existence of a class of meaningless questions was clearly recognized. Four types of questions are given, as in the following text: "A person is not a fit person to debate (or discuss with) if he, when asked a question does not categorically explain a question which ought to be categorically explained, does not analytically explain a question which ought to be explained analytically, does not explain with a counter-question a question which ought to be explained with a counter-question, and does not set aside a question which ought to be set aside"[9] (*Aṅguttara Nikāya* I. 197 in Jayatilleke 1963, 281). In the present context, the semantically anomalous questions mentioned last constitute the most interesting class. Examples of such questions may be taken from ordinary language, e.g. "In which direction has the fire gone?" (as distinct from "In which direction did the fire spread?") or "Is the son of a barren woman white or black?". Alternatively such questions are found in philosophy, e.g. "Are the *skandhas* (the constituents of being[10]) the same as *sattva* (the living being), or are they different?", "Does the saint exist after death?" or "What is decay and death and of whom is this decay and death?" While the question on *skandha/sattva* could be said to contain in a nutshell such works as Ryle's *Concept of mind*, the entire early Buddhist approach constitutes the origination of a kind of analysis which reminds us of British "ordinary language" philosophy. Both proceed in an essentially similar way: specific examples from ordinary language and philosophically interesting cases are discussed, but no general semantic theory is evolved.

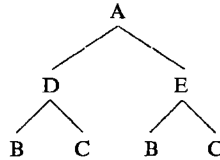
[9] *sacāyam ... puggalo pañhaṃ puṭṭho samāno ekaṃsa-vyākaraṇīyaṃ pañhaṃ na ekaṃsena vyākaroti, vibhajja-vyākaraṇīyaṃ pañhaṃ na vibhajja vyākaroti, paṭipucchā-vyākaraṇīyaṃ pañhaṃ na paṭipucchā vyākaroti, ṭhapanīyaṃ pañhaṃ na ṭhapeti, evaṃ santāyam ... puggalo akaccho hoti.*

[10] i.e. *rūpa* 'bodily form', *vedanā* 'sensation', *saṃjñā* 'perception', *saṃskāra* 'disposition' and *vijñāna* 'consciousness'.

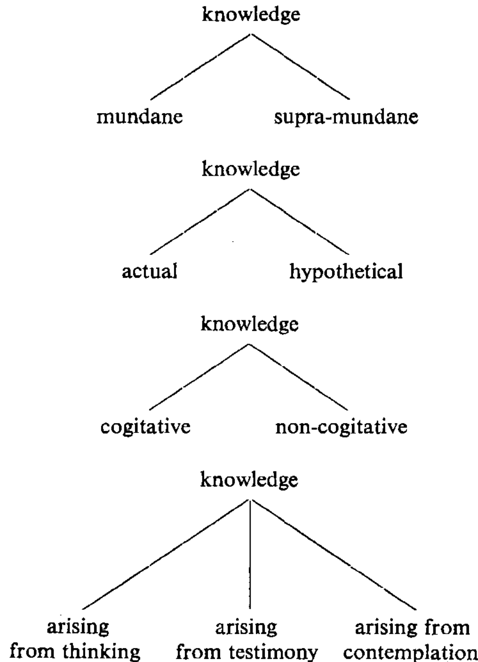
Buddhist semantics slowly developed from classifications of the meanings of terms. Many classifications were given by means of dichotomy or binary splits, but splits into three, four, etc., up to ten, are also found. Even more interesting is the fact that it was realized that this system is inadequate since it cannot account for cross-classification, i.e., for such cases as:

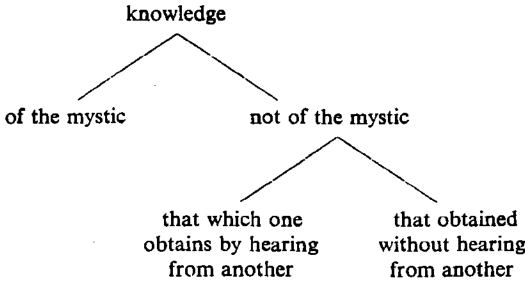


which contains a redundant repetition and is on a par with an alternative which also contains a redundant repetition, i.e.:



This problem was not solved, but different binary splits for the same lexical item were offered instead. Jayatilleke (1963, 302-3) gives the following examples from *Vibhaṅga* 322-4 (the original terms are here omitted):





The last tree is not described explicitly but is, according to Jayatilleke, implied. (It may be observed that these classifications in terms of trees are on a level with the semantic trees of Katz, Fodor, and Postal; only in later work of Chomsky's they were replaced by sets in such a way that cross-classifications are accounted for.)

There was strong opposition against these early classifications, and the nominalist tendencies familiar from Buddhist philosophical literature come out clearly in an opponent's statement that "there do not exist any ideas which can be grouped together by other ideas". Jayatilleke calls this one of the earliest references to the problem of universals. The opponent's views are also expressed with reference to these classifications in terms of trees: one cannot group together ideas by means of other ideas "in the same way as two bullocks may be grouped together by a rope or a yoke" (Jayatilleke 1963, 305).

The nominalist tendency in Indian thought, which was clearly expressed in Buddhism, reacted against the realism that characterizes much of Hindu thought and against the reification that arises in Sanskrit even more easily than in many other languages. This is partly due to nominalization and to such devices of the language as the abstract forming suffixes *-tva* and *-tā* (cf. Staal 1965b). When the Buddhists came to formulate their doctrines in a clearer and more consistent way, they evolved the theory that words connote concepts or mental images (*vikalpa*) and never directly refer to a thing-in-itself.

The early positivistic schools of Buddhist philosophy, such as the Sautrāntika and the Vaibhāṣika, agreed that words are made up of sound-atoms (*śabda-paramāṇu*). According to the Sautrāntika, words are therefore material. But according to the Vaibhāṣika the Buddha's words, at least after his *parinirvāṇa*, are non-material. They held that sound alone is not capable of conveying any meaning; it must operate on something non-material, called *nāman*, in order to convey a meaning. The Sautrāntika on the other hand argue that verbal sound may convey a meaning when it is so agreed by convention (*saṅketa*). Since *saṅketa* is essential even when *nāman* is assumed, the latter is redundant and hence useless (Jaini 1959).

The later Buddhist schools evolved the theory that words connote concepts or mental images (*vikalpa*) and never directly refer to a thing-in-itself, which according to them is a momentary particular or individual (*svalakṣaṇa*) (Kunjunni Raja 1956, 346). Thus, a theory of meaning was developed from which direct reference was

systematically excluded. The meanings themselves cannot refer to momentary individuals, since otherwise there would be as many meanings as there are individuals, and language would become both infinite and superfluous. But neither can a meaning refer to a class (*jāti*), as the Mīmāṃsakas and other Hindu realists assumed: for there need not be one single thing, shared by all individuals belonging to a class (cf. Wittgenstein's "family resemblance"). Moreover if I am told to tie up a cow, I proceed to tie up a particular cow and not the class of all cows (contrast Ryle: "'dog' must denote something which we do not hear barking, namely either the set or class of all actual and imaginable dogs, or the set of canine properties ..."). A meaning, then, is only capable of *excluding* everything else. This is called *apoha* 'exclusion' or *anyāpoha* 'exclusion of everything else'. It is argued that it is immediately clear that such a doctrine is necessary. For if I were told to tie up a cow and the word "cow" failed to exclude other things, I might tie up a horse without noticing that I had failed to understand and obey the command.

The *apoha* doctrine was studied in the thirties by Frauwallner (1930-35, 1937). Apparently due to Diṅnāga (5th century A.D.), it was expounded in Dharmakīrti's *Pramāṇavārttika*. The first chapter of this work has recently been published (Gnoli 1960); the entire work has been translated into English by M. Nagatomi and will be published in the Harvard Oriental Series.

The theory that language is conventional, which may be traced back to the early Buddhist recognition that language has dialects and is subjected to change (Jayatilleke 1963, 315), continued to be adhered to by the Buddhist philosophers. Dharmakīrti links it with the *apoha* theory which implies that the meaning of a word is a conceptual construction. Language, therefore, does not picture or refer to reality. It is merely used for communication (*vyavahāra*) and for practical purposes (*arthakriyā*).

It is known that the probable originator of the *apoha* theory, Diṅnāga, held that in nominal compounds such as *nīlotpala* 'blue lotus' the term 'blue' excludes all lotuses that are not blue, and the term 'lotus' excludes all blue things that are not lotuses. Kunjunni Raja (1963, 84-5, 191-3) has noted that this doctrine was foreshadowed by the Sanskrit grammarians, since the grammarian Vyāḍi, possibly a younger contemporary of Pāṇini, seems to have held that the meaning of a word in a compound is exclusion (*bheda*) of everything else.

5. BHARTṚHARI'S PHILOSOPHY OF LANGUAGE

A decade ago, Bhartṛhari's *Vākyapadīya*, "l'un des ouvrages difficiles de l'antiquité indienne" (Renou 1953b, 94), was difficult to obtain even in partial editions, had not been translated and had hardly been studied. At present, a considerable amount of literature is beginning to be devoted to this work, starting perhaps with Brough 1951 and including Hacker 1953 (197-205) and the monographs mentioned earlier by

Ruegg, Sastri, Pandeya, Kunjunni Raja and Biardeau. The greatest need at present is for more detailed and specialized studies. The *Vākyapadīya* consists of three parts dealing with language in general (*brahman*), sentence (*vākya*) and word (*pada*). The first has been re-edited and — for the first time — translated by Biardeau (1964; cf. Gray 1968) together with the commentary by Harivṛṣabha (whom the 1935 editor Cārudeva Śāstrī identified with, but Biardeau regards as different from, Bhartṛhari himself). Of a complete translation and edition by K. A. Subramania Iyer, parts have now been published by the Deccan College Postgraduate and Research Institute (Poona). Other translations are announced from time to time. A translation made in 1957 by Śānti Bhikṣu Śāstrī exists in manuscript and a critical edition is being prepared by W. Rau (Biardeau 1964b, 21 note). Raghunātha Śarmā has also edited the first part, and written a new commentary in Sanskrit (*Ambakartrī*, Varanasi 1963).

It used to be thought, following the testimony of the Chinese pilgrim Yi-tsing, that Bhartṛhari died in A.D. 651. But since Diṅnāga quotes him, he is nowadays assigned to the fifth century. It has also been thought that Bhartṛhari was a Buddhist; he is now, notwithstanding traces of Buddhist influence, generally considered a Hindu. This may already be inferred from the mere fact that in his metaphysical linguistics, he identifies the essence of speech (*śabda-tattva*) with the ultimate reality (*brahman*). This doctrine, called *Śabdabrahmavāda*, was further elaborated in the philosophy of *Śabdādvaita* 'non-dualism of speech'.

To describe, even in outline, the main ideas of the *Vākyapadīya* would not only require more space than is available here, but would also presuppose more research devoted to the entire work than has so far been done. Two quotations may suffice to render the flavour of the original and illustrate some of Bhartṛhari's ideas. The first deals with the problem of language learning. Bhartṛhari attributes the faculty of speech to an inborn intuition or instinct (*pratibhā*), for language is not learned. This may be compared to cases of animal instinct: "What makes the cuckoo sing in spring? What teaches the spider to weave its web, or the birds to build their nests? Who teaches beasts and birds to eat, to make love, to fight, to swim, etc., activities practised on account of heredity?"[11] (II.151-2, quoted Brough 1953, 171; Biardeau 1964a, 317; Kunjunni Raja 1963, 148).

The second passage deals with language in a wider context. The term *śabda*, generally translated as "speech" or "word" (and often capitalized to distinguish it from e.g. *pada* 'word'), is here translated as "language". Bhartṛhari says: "Those who know the tradition know that the world is a transformation of language. First this universe arose from the Veda. All proper activity in the world is supported by language. Even a child knows it on account of dispositions acquired in previous

[11] *svaravṛttiṃ vikurute madhau puṃskokilasya kaḥ / jantvādayaḥ kulāyādikaraṇe kena śikṣitāḥ // ākāraprītyabhidveṣaplavanādikriyāsu kaḥ / jātyanvayaprasiddhāsu prayoktā mṛgapakṣiṇām* (cf. Chomsky and Halle speaking about the mental abilities that underlie the achievement of normal linguistic competence, "abilities that may be as individual and species-specific as that of a bird to learn a particular class of songs, of a beaver to build dams, or of a bee to integrate its own actions into the intricate social activity of the hive": *Preface* to the series *Studies in Language*).

lives. The first use of the organs of speech, the setting in upward motion of breath, the striking of the places of articulation only take place when prompted by language. There is no cognition that is not accompanied by it. All knowledge appears to be permeated by language. If knowledge would go beyond its permanent linguistic form, light would not shine, reflexion being due to it. It is the foundation of all the sciences, arts and crafts. On its account all manifest things are distinguished from each other. It is the outer and inner consciousness of all transmigrating beings. In all species awareness is limited to language"[12] (I.120-6, quoted Biardeau 1964a, 317-8; cf. Ruegg 1959, 76; Murti 1963, iii).

In the *Vākyapadīya* one does not merely meet with generalities. Many problems that are more specific are treated also. Aspects of the *kāraka* theory receive a mentalistic interpretation. The cases are regarded as realizations (*sādhana*; Ruegg, misleadingly "accessoires") of the *kāraka* and their use is determined by psychological factors (*bauddhaḥ sādhanavyavahāraḥ*; Ruegg 1959, 67). — Meaning is distinguished from reference: the subject of a sentence need not refer to an external object, for in such sentences as *aṅkuro jāyate* 'the bud bursts forth (from the soil)' there is as yet no bud to refer to. In fact, the subject of a sentence is determined by *prayoga* 'usage' and *vivakṣā* 'intention (of the speaker)' (Ruegg 69). — In the process of communication, the speaker transfers his *śabda* which is without fixed succession (*akrama*), through the medium of sound which has fixed succession (*sakrama*), to the listener where it is again without succession (Ruegg 75). — Bhartṛhari clearly takes sides in the discussion on the relation between word and meaning: this relation is *nitya* 'eternal' and *svābhāvika* 'natural', not based on *samaya* 'convention' (Ruegg 73).

Bhartṛhari's fame used to be largely based on the theory of *sphoṭa*, a concept which in the past was regularly regarded as denoting a mysterious and mystical entity, akin to λόγος in the speculations of Philo Judaeus or early Christianity. The right approach to its correct interpretation has been indicated by Brough (1951), followed by Kunjunni Raja (1963). According to Brough, there is a clear difference between the concepts of *sphoṭa* in the *Mahābhāṣya* and the *Vākyapadīya* (neglected e.g. by Pandeya 1963; cf. also Biardeau 1964a, 368 *note*). Bhartṛhari distinguished between (1) the *sphoṭa* of an expression, which denotes the expression as a single unit conveying a meaning; (2) the *prākṛta-dhvani* of an expression, i.e. the phonological structure assigned to the type it represents; and (3) the *vaikṛta-dhvani*, i.e. the phonetic realization in its particular utterance-token. Various kinds of *sphoṭa* were distinguished: e.g., for *varṇa* 'phoneme'[13], *pada* 'word' and *vākya* 'sentence'. For Bhartṛhari the

[12] *śabdasya pariṇāmo'yam ity āmnāyavido viduḥ / chandobhya eva prathamam etad viśvaṃ vyavartata // itikartavyatā loke sarvā śabdavyapāśrayā / yām pūrvāhitasaṃskāro bālo'pi pratipadyate // ādyaḥ karaṇavinyāsaḥ prāṇasyordhvaṃ samīraṇam / sthānānām abhighātaś ca na vinā śabdabhāvanām // na so'sti pratyayo loke yaḥ śabdānugamād ṛte / anuviddham iva jñānaṃ sarvaṃ śabdena bhāsate // vāgrūpatā ced utkrāmed avabodhasya śāśvatī / na prakāśaḥ prakāśeta sā hi pratyavamarśinī // sā sarvavidyāśilpānāṃ kalānāṃ copabandhanī / tadvaśād abhiniṣpannaṃ sarvaṃ vastu vibhajyate // saiṣā saṃsāriṇāṃ saṃjñā bahir antaś ca vartate / tanmātrām avyatikrāntaṃ caitanyaṃ sarvajātiṣu //*

[13] Though Thieme (*ZDMG* 107.665-666 [1957]) has shown that *varṇa* often denotes a class of

most important *sphoṭa* and the only one that is ultimately real, is that of the *undivided sentence*. For according to him, the *sphoṭas* of *varṇa*, *pada*, etc., are merely fictional (*kālpanika*) constructs of the grammarians (Brough 1951, 44). "The division (of a sentence) into words, and their classification as verbs, nouns, and so on, as well as the subdivisions into roots and affixes, are all means for the study of language, without any absolute reality in themselves" (Kunjunni Raja 1963, 15). Or, as Bhartṛhari puts it himself: "There are no phonemes in the word, and no parts in the phonemes. The words have no separate existence apart from the sentence"[14] (I.73; cf. Biardeau 1964a, 400-20; etc.). This doctrine may be traced back to Audumbarāyaṇa, an old authority mentioned in the *Nirukta* (Brough 1952). In this context, Bhartṛhari discusses at least eight definitions of sentence which have been proposed (Ruegg 1959, 82-9; Kunjunni Raja 1964). This list was widely known, and even more than eight definitions were read into it (e.g. by Jaina philosophers). Later developments of the *sphoṭa*-doctrine are beginning to be known (see especially Joshi 1967).

The *Vākyapadīya* has also been studied in connection with the concepts of *vivarta* and *pariṇāma*, key concepts in the later development of Advaita Vedānta (Hacker 1953, 197-205; cf. Gray 1968). Bhartṛhari used both terms, but indiscriminately (e.g. I.120, quoted above); the fact that the commentator Harivṛṣabha seems to make a distinction between them may, along with other facts, indicate that he and Bhartṛhari were not the same person (Biardeau 1964b, 7-10). We have already seen that the doctrine of the eternality of words required that substitutions are considered as being applicable to entire words only (above page 503). In fact, the *Prātiśākhya* emphasis on *pariṇāma* 'transformation' and the Pāṇinīya emphasis on *ādeśa* 'substitution' may be the predecessors, respectively, of the Sāṃkhya *pariṇāmavāda* (the doctrine that the effect is a transformation of the cause) and the Advaita *vivartavāda* (the doctrine that the effect is an illusory superposition upon the cause). But Kātyāyana had already noted that even the substitution of entire words conflicts with the eternality of words: *anupapannaṃ sthānyādeśatvaṃ nityatvāt* "the replacement of an original by a substitute is impossible on account of the eternality (of words)". Thereupon the theory, perhaps implicit in the *Mahābhāṣya*, of *buddhi-vipariṇāma*, was advanced: it is not the words, but only our subjective awareness of them, that changes (Ruegg 1958, 1959; for Ruegg's criticism of Hacker cf. Staal 1960).

That Bhartṛhari does not distinguish between *vivarta* and *pariṇāma* may also be explained against the background of his ontology (Hacker 1953, 200). Regarding Bhartṛhari's ontology, much has been made of the distinction between three stages of speech, *paśyantī* 'visionary', *madhyamā* 'intermediate' and *vaikharī* (or *virāṭśabda*) 'articulated' (cf. e.g. Sastri 1959, 67-73), artificially related to a well-known verse of

phonemes, one must agree with Ruegg (*JAOS* 82.67 [1962]) as against Shefts (*JAOS* 80.259 [1960]) that this need not be so in all contexts.

14 *pade na varṇā vidyante varṇeṣv avayavā na ca | vākyāt padānām atyantam praviveko na kaścana ||*

the Ṛgveda[15] (cf. Renou 1953a). Though these concepts are discussed in the *Vākyapadīya*, probably out of regard for the tradition, the view that they contain the entire philosophy of Bhartṛhari in a nutshell has nothing to recommend it. Biardeau speaks, in a somewhat similar vein, of *sphoṭa* as the "ontological foundation of language" (e.g., 1964a, 375). But is should not be necessary to point to metaphysics, provided semantics is recognized as a proper department of linguistic research. Bhartṛhari's philosophy is best understood as a metaphysical superstructure to a semantic theory (cf. Kunjunni Raja 1963, 146-8) . The semantic theory of Bhartṛhari (who also wrote a commentary on part of the *Mahābhāṣya*, which was to be published under the editorship of the late V. S. Agrawala; cf. Renou 1969, 488, n. 20) can only be understood against the background of the Indian grammatical tradition.

6. VEDĀNTA AND RELATED VIEWS ON LANGUAGE

Though, in the context of the systems of the Vedānta, Bhartṛhari's philosophy of *śabdādvaita* could be characterized as a kind of *bhedābhedavāda* "doctrine of difference- and non-difference (between the absolute and the world)" (Hacker 1953, 200), Bhartṛhari is in some respects a predecessor of the well-known Advaita philosopher Śaṅkara. Śaṅkara gives an account of *śabdādvaita* in *Brahmasūtrabhāṣya* 1.3.28 (often translated). Though he accepts the doctrine that the world originates from *śabda*, he first rejects the Mīmāṃsā view that the word is nothing but the phonemes (*varṇā eva śabdāḥ*) (held by Upavarṣa), and subsequently rejects the *sphoṭa* theory. Śaṅkara accepts that a certain number of phonemes in a fixed succession may through continuous usage have been associated with a certain meaning. The intermediary of an entity like *sphoṭa*, then, is quite redundant: "it would be a more complicated hypothesis to assume that the phonemes, when experienced in a fixed order, manifest the *sphoṭa*, and the *sphoṭa* in its turn manifests the meaning (*artha*)".[16]

Regarding the meaning of sentences the Advaitins accept the doctrine of *abhihitānvaya* of Kumārila Bhaṭṭa (this is in accordance with their general viewpoint: *vyavahāre bhāṭṭanayaḥ* "in matters pertaining to the everyday world the Bhāṭṭa view [is authoritative]"). Some Advaitins interpreted specific doctrines of the grammarians in a purely metaphysical manner, e.g., by stating that Patañjali's view that words denote classes (*jāti*) means that all words ultimately denote the *summum genus* of pure existence (*sattā*), i.e., the absolute *brahman* (*Sarvadarśanasaṃgraha* on *Pāṇinidarśana*).

The problem of the referential capacities of language is discussed particularly

[15] ṚV 1.164.45: *catvā́ri vā́k párimitā padā́ni tā́ni vidur brāhmaṇā́ yé manīṣíṇaḥ / gúhā trī́ṇi níhitā néṅgayanti turī́yaṃ vācó manuṣỳā vadanti* 'language is measured in four quarters; learned brahmans know it. The three hidden quarters they don't set in motion; people speak the fourth'.

[16] *varṇāś ceme krameṇa gṛhyamāṇāḥ sphoṭaṃ vyañjayanti sa sphoṭo 'rthaṃ vyanaktīti garīyasī kalpanā syāt* (*Brahmasūtrabhāṣya* 1.3.28, ed. Nirṇayasāgara 259-260).

in connexion with expressions referring to the absolute. Here Advaita had to reckon with an Upaniṣadic background of negative theology, stressing that the absolute is *neti neti* 'not (this) not (this)' (e.g. *Bṛhadāraṇyakopaniṣad* 2.3.6), or that it is beyond the reach of language, *yato vāco nivartante* 'that from which words return' (*Taittirīyopaniṣad* 2.4). Bhartṛhari had clearly recognized that such expressions are in no way helpful (cf. Wittgenstein): "that which is spoken of as unspeakable, as soon as it is obtained as spoken of by that unspeakability, is spoken of"[17] (III.3.20: Kunjunni Raja 1963, 254).

The Advaitins did not rest content with that but invoked the metaphorical use of language. In such expressions as *tat tvam asi* 'thou art that', which try to express the identity of the self and the absolute, the absolute "is indicated, not spoken of" (*tal lakṣyate na tū'cyate*). According to De Smet, who has studied the methods of theological interpretation used by the Advaitins with regard to such statements, the reference to the absolute is not through the primary meaning (*abhidhā*) of the word, but through its secondary meaning (*lakṣaṇā*). The secondary meaning may exclude the primary meaning (this is called *jahallakṣaṇā*), include it (*ajahallakṣaṇā*), or both include and exclude it (*jahadajahallakṣaṇā*). An example of *jahallakṣaṇā* is *dvirepha*, litt. 'with two *r*'s', a term which indicates the bee, because *bhramara* 'bee' has two *r*'s; the primary meaning is here excluded for bees do not have *r*'s. An example of *ajahallakṣaṇā* is *kuntāḥ praviśanti*, litt. 'the lances enter', which is also used to indicate that along with the lances the men who carry them enter. The case of *jahadajahallakṣaṇā* is the one which is appropriate in the context of definitions of the absolute (De Smet 1954, 1960; Kunjunni Raja 1963, 249-54).

The distinction between primary and secondary meaning is not confined to Advaita. On the contrary, it is very commonly met with among grammarians and philosophers, while it provides the foundation for the science of poetics (*alaṅkāraśāstra*). Patañjali had already referred to primary and secondary meanings as *mukhya* and *gauṇa*, respectively. Bhartṛhari spoke about transfer of meaning (*upacāra*). The term widely adopted in later times is *lakṣaṇā*, which may be translated as 'metaphor'. A third component, added by Ānandavardhana in the ninth century, is *dhvani* or *vyañjanā* 'suggestive power'. The perception of *dhvani* is not open to all: one has to be a connoisseur and have at one's disposal a special intuition, called *pratibhā* (the term Bhartṛhari used for the intuition which all language users need in order to grasp the meaning of a sentence) (Sastri 1959, 244-64; Pandey 1963, 693-732). The concepts of *lakṣaṇā* and *dhvani* have been described in detail by Kunjunni Raja (1963, chapters VI and VII), and are further analysed in the literature on poetics and aesthetics (e.g., De 1960, Kane 1961, Pandey 1959, 1963, Raghavan 1963, Renou 1961). But the field of Sanskrit poetics is large and cannot be done justice to in the present context.

There are many links between Sanskrit poetics and literary theory and criticism

[17] *avācyam iti yad vācyaṃ tad avācyatayā yadā / vācyam ity avasīyeta vācyam eva tadā bhavet //*

on the one hand, and some philosophies of Kashmir Śaivism on the other. The philosophical views of this school are in many respects reminiscent of Bhartṛhari (cf. e.g. Ruegg 1959, 101-16). Here it must suffice to state that Kashmir Śaivism considered its doctrine as a manifestation of the god Śiva in the medium of language (*vāk*). The universe consists of two regions: *vācya* 'to (be) spoken (of)' (cf. *signifié*) and *vācaka* 'speaking' (cf. *signifiant*). While both aspects coincide in Śiva, *vācya* corresponds to the objective substance of the world whereas *vācaka* corresponds to conscious beings. This metaphysical dualism was on the one hand connected with traditional grammatical and semantic doctrines, but on the other hand developed into poetics and literary theory.

The later developments of the systems of the Vedānta will probably contain much material that is relevant to the philosophy of language. These developments however have not been studied from this particular point of view, and have in fact hardly received the philosophical attention they seem to deserve. There is no evidence to support the view that they contain little that is new and original; the opposite could be expected in view of the later developments of logic (in *navya-nyāya*) and of grammar (in *navya-vyākaraṇa*) (cf. Renou 1953b).

An example of an interesting passage from later Vedānta occurs in the *Pramāṇacandrikā*, a fourteenth or fifteenth century text on logic and epistemology from the Dvaita (Mādhva) school. Its unknown author advocates the view that language is learned by means of a kind of ostensive definitions and by distributional analysis: "The acquisition of meaning takes place by pointing (*nirdeśa*) accompanied by showing etc. the fingers. Thus when a child sits on the lap of its father or mother, the parent begins to draw its attention which is elsewhere to himself or to his words by showing the fingers and making a sound by snapping them, while uttering the sentences 'Child, that is your mother', 'That is your father', 'That is your brother', 'He eats the banana', etc. Then by that pointing the child learns and understands that the expressions and the expressed are related in a *general* way and that a certain combination of sounds corresponds with a certain combination of meanings. Later when hearing in different circumstances 'That is your sister', 'That is your friend', 'He is eating a cake', he begins to learn the different meanings of words by adding and removing, and so learns the *specific* relations between expressions and expressed, e.g., that the word 'mother' denotes the female parent".[18]

In this section only a few of the Vedānta doctrines concerning the philosophy of language could be illustrated. Poetics was merely touched upon. It may be noted,

[18] *śaktigrahaś cāṅguliprasāraṇādipūrvakanirdeśenaiva bhavati / tathā hi mātuḥ pitur vā aṅke sthitaṃ bālam anyamanaskaṃ santam aṅguliprasāraṇachoṭikāvādanābhyāṃ svavacanaśravaṇābhimukhaṃ mātrādyabhimukhaṃ ca vidhāya yadā vyutpādayitā vākyaṃ prayuṅkte bāla taveyaṃ mātā tava pitāyaṃ te bhrātāyaṃ kadalīphalam abhyavaharatītyādi / tadā tena nirdeśenaiva tasya śabdasamudāyasya tasminn arthasamudāye vācyavācakabhāvasambandhaṃ tāvat sāmānyato'vagacchati bālaḥ idam anenāyaṃ bodhayatīti / punar iyaṃ te svasā, ayaṃ te sakhā'pūpaṃ khādatītyādiprayogāntareṣu śabdārthayor āvāpodvāpābhyāṃ śabdabhedādikam avagamya mātrādipadānāṃ jananyādau viśeṣato vācakatvam avagacchatīti* (Maitra 1936, 107-108, 159-160).

finally, that semantics was an important topic not only for poetics. Some of the greatest Sanskrit poets themselves paid attention to word and meaning, as may be seen from the opening verse of Kālidāsa's *Raghuvaṃśa* (Ruegg 1959, 110): "I salute the world parents Śiva and Pārvatī, united like word and meaning, in order to acquire word and meaning".[19]

7. NYAYA-VAIŚEṢIKA DOCTRINES OF LANGUAGE AND THE LOGICAL ANALYSIS OF SENTENCES

The early Nyaya-Vaiśeṣika is essentially a philosophy of *padārtha*, a term which means "a thing (*artha*) to which a word (*pada*) refers", i.e., "a referent" (Potter 1957) and which is customarily rendered as "category". As in Aristotle, the categories of language are related to the parts of speech and are at the same time regarded as categories of being. In order to determine what a category is and what it comprises, linguistic usage (*vyavahāra*) is generally invoked (Murti 1963, iii). That the categories have to be explained against the background of language was pointed out long ago by Faddegon (1918, 141-5), but since then this rather promising suggestion has not received a more detailed treatment. The relationship between the *padārtha*-system and the *kāraka*-theory also ought to be elucidated (cf. Staal 1967, 44-5).

What are the things to which words refer? The early Naiyāyikas accepted the realistic theory that words sometimes refer to individuals (*vyakti*) and sometimes to universals (*ākṛti*, *jāti* or *sāmānya*). Metaphorical usage (referred to by means of the term *upacāra* 'transfer') is also recognized. The later Naiyāyikas hold the view that a word refers to an individual as qualified by a class (*jāti-viśiṣṭa-vyakti*).

The Nyāya philosophers gradually came to study logical laws and rules. Some of these may be traced back to earlier rules in grammar, and in particular to the *paribhāṣā*-rules. The terms *paribhāṣā* and *nyāya* are sometimes regarded as synonyms (*Paribhāṣenduśekhara* ed. Kielhorn iv, *note*). Such grammatical backgrounds have been found e.g. for the laws of contradiction and double negation (Staal 1962a) and for the law of contraposition (Staal 1962c).

During many centuries the logicians and the Mīmāṃsā philosophers have been engaged in discussions with each other and with the grammarians concerning the definition of the sentence. Starting from the naïve definition of sentence as a collection of words, or from the definition of sentence as that which possesses one finite verb (see above page 506), the Mīmāṃsakas added qualifications such as the requirement of *ākāṅkṣā* 'mutual (syntactic) expectancy'. Applying this criterion, a mere string of words ("cow horse man elephant") is not a sentence, but a "grammatical" sentence such as "he irrigates it with water", is. However, according to this criterion, "he irrigates it with fire" is also a sentence, for it is quite grammatical. Hence *ākāṅkṣā* is not a sufficient condition for a string of words to be a sentence.

[19] *vāgarthāv iva saṃpṛktau vāgarthapratipattaye / jagataḥ pitarau vande pārvatīparameśvarau //*

Another requirement was added accordingly, i.e., *yogyatā* 'semantic compatibility', which is lacking in the sentence "he irrigates it with fire". Bhattacharya (1962, 141) quotes another example of a grammatical sentence, i.e. a sentence fulfilling the condition of *ākāṅkṣā*, which does not answer this requirement, i.e. which is semantically anomalous: "There goes the barren woman's son with a chaplet of sky-flowers on his head. He has bathed himself in the waters of a mirage and is holding a bow of rabbit's horn".

As a further condition, *āsatti* or *saṃnidhi* 'contiguity' was required, which postulates that words do not constitute a sentence when they are uttered at long intervals or when they are separated by other words, even if *ākāṅkṣā* and *yogyatā* hold. Finally, the discussion was sometimes extended to *tātparya* '(speaker's) intention', but there was much difference of opinion with regard to this concept (Chatterjee 1950, 336-40; Brough 1953, 163; Kunjunni Raja 1963, 151-87).

The later Naiyāyikas held interesting theories with regard to the understanding of sentences and analysed sentences in a special way. According to them, a sentence, i.e. a string of words which possesses *ākāṅkṣā*, *yogyatā* and *āsatti*, generates a cognition of its meaning (*śabdabodha*) in the hearer. The semantic contents of this cognition may be expressed by a paraphrase of the original sentence. This paraphrase is described in terms of the relation between a qualificant (*viśeṣya*) and a qualifier (*viśeṣaṇa* or *prakāra*). A complete semantic theory, at least for declarative sentences, is constructed in terms of this relation of predication (Matilal 1966).

Matilal gives the following example of the paraphrase of the sentence: *raktaṃ puṣpam* 'the flower is red'. This paraphrase represents a cognition of the qualificand "flower" qualified by the qualifier "red". All such paraphrases may be expressed by using the symbolism $Q(xy)$ for "x which is qualified by y". The procedure, which is relatively uninteresting in the case of purely nominal sentences, becomes more interesting when sentences contain one finite verb. In that case the convention is adopted, that the subject expresses the qualificand. The sentence: *harir vihagam paśyati* 'Hari sees a bird' therefore receives the paraphrase: *vihaga-karmaka-darśanānukūla-kṛti-mān hariḥ* 'Hari is qualified by effort generating the activity of seeing which has a bird as its object'. This may be re-written as: "Hari is qualified by effort which is qualified by the activity of seeing which is qualified by the object bird". If h stands for "Hari", k for *kṛti*, s for "seeing" and b for "bird", this paraphrase may be represented by: $Q(hQ(kQ(sb)))$.

While the logicians held the view that the chief element of the sentence is a noun (e.g., the subject), the grammarians continued to believe that the chief element of the sentence is a verb. The old controversy between the followers of Gārgya and those of Śākaṭāyana (above page 508) re-emerges as it were in a more sophisticated form. The later grammarians considered the finite verb as the chief qualificand in their paraphrase. The sentence: *harir vihagam paśyati* would then receive the following paraphrase: *vihaga-karmaka-darśanānukūla-vyāpāro hari-kartṛkaḥ* 'the operation generating the activity of seeing which has a bird as object is qualified by Hari as its doer (i.e., is done by Hari)'.

Though these semantic theories have in their main outline been made available by Matilal (1966), it is likely that they deserve much closer study. It seems that they have been worked out in great detail, and that variations and possible counter-examples were taken into account. This was most probably due to the continuing debates between the later logicians and grammarians.

The above survey has shown that there is no single Sanskrit philosophy of language. On the contrary, during roughly two and a half millenia a great variety of linguistic theories and speculations, and many systems of semantics were put forward and were sometimes developed in detail. The linguistic tradition of the Sanskrit grammarians remains the backbone of these developments. But the philosophers of the Mīmāṃsā, the logicians of the Nyāya (especially in later times), the Buddhists and the Jains (who have hardly been mentioned in the present account) have each contributed original and important viewpoints and investigations. While something is known with regard to each of them, much remains to be done, and it may be safely assumed that future research will yield unexpected results not only in matters of detail, but also in matters of principle. This assumption is not gratuitous, for there are many indications which show that the philosophy of language (in the sense here used) is one of those fields where India has — in bulk, variety, and depth — at least as much to offer as the West (not necessarily excluding its present-day attainments).

While all of the topics mentioned, and many that have not even been touched upon, stand in need of further elucidation, the following may perhaps be mentioned as the most important desiderata for future research. Though the content of the Prātiśākhya literature is partially known (Varma 1961[2], Allen 1953), their methodology requires closer study. Despite good modern studies (e.g. Shefts, Birwé 1966), Pāṇini's method requires closer and less incomplete investigation. The possibilities of formalization should also be explored. With regard to many specific but fundamental points (e.g. the *kāraka* theory), Pāṇini's treatment has been analysed only partially. From Patañjali onwards, excellent work has been done (e.g. by Kielhorn, Renou, and Thieme), but it covers only a small part of the grammatical tradition. The *Mahābhāṣya* itself has not been translated, and almost none of the later grammatical works have. With regard to Mīmāṃsā, the interesting work of Edgerton, providing detail and precision concerning one particular topic, has not been carried on. The subject in its entirety is receiving less attention than formerly, even in India. The linguistic theories and speculations of the early Buddhists have been referred to by Jayatilleke. But the very extensive later developments, about which fairly much is now known, have hardly been studied from the particular point of view of the philosophy of language. It may however be especially interesting, as languages other than Sanskrit are involved.

Biardeau has satisfied a long felt need by providing an edition and translation of the first chapter of the *Vākyapadīya*. This is being supplemented by the work of the foremost Indian authority on Bhartṛhari, Subramania Iyer. The doctrines of

Bhartṛhari have recently been treated from many points of view. But that we are only at the beginning may be inferred from the fact that there is no communis opinio (e.g. between Biardeau and Kunjunni Raja) even with regard to basic issues. Of the later grammatico-philosophical development, the *sphoṭa* doctrine has been studied by Joshi, but much else remains inaccessible. Of later Vedānta little is known, even in a purely philosophical domain; with regard to "modern" logic (*navya-nyāya*) we are in a slightly better position. But the discussions between modern logicians and modern grammarians will have to be subjected to closer scrutiny, as Matilal's investigations have shown. As regards the older Nyāya-Vaiśeṣika, its origination from a background of linguistic research should be studied. The relationships between the categories and the *kāraka*-theory of the grammarians on the one hand, and the parts of speech of Sanskrit on the other, have not received due attention. Such investigations may throw light on some purely logical and philosophical problems. The general problem, lastly, of the relations of views on the nature of language and meaning, and on philosophy in general, to the particular linguistic background of Sanskrit, is a virtually unexplored topic.

The results of recent research make it clear that future investigations will have to be carried out not only by Sanskritists, linguists, and philosophers, but also by both Western and Indian scholars; direct cooperation is even more desirable, for the subject remains a difficult one (in fact, some of the best results have been reached by Western scholars trained by Indian paṇḍits). With regard to all these investigations, Emeneau's statement of 1955 (quoted above page 500) continues to be valid: "... the results are likely to be worth the effort; it is a subject that can be recommended to aspirants".

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SOME INDIAN THEORIES OF MEANING

By JOHN BROUGH

IN a paper to the Society in 1951,[1] I gave some account of ancient Indian theories on the relationship between sounds and meaningful words which is summed up in the doctrine of *sphoṭa*. The present paper is intended to supplement that discussion and to indicate those aspects of Indian theory on the more general topics of meaning which I feel preserve the greatest interest for modern linguistic theory.

One of the earliest pieces of practical linguistics of which we have any record is the composition of the *pada* text of the Ṛgveda. This is an analysis of the *saṃhitā*, or connected text as uttered in recitation, into its constituent words in the form in which they would appear in isolation. This involved the resolution of the rather complicated junction-features which the connected Sanskrit sentence exhibits, and in many places the *pada* text did in fact amount to an interpretation at a time when the connected text was beginning to suffer from obscurity. Alongside this analysis of words from the sentence there was developed the study of the meanings of the words thus derived, and the results of this etymological study is summed up for us in the *Nirukta* of Yāska. It is clear that just as phonetics arose in India chiefly as a means to preserve the mode of utterance of the Vedic hymns, so the study of words and of the meanings of words was undertaken in the first place primarily to meet the needs of Vedic ritual and the text material required by it. It was thus on a basis of words and of word-meanings that the study of Vedic exegesis took shape in what was later known as the Mīmāṃsā school of philosophy. And, indeed, throughout the development of Indian linguistic thought, the

[1] Theories of General Linguistics in the Sanskrit Grammarians, *TPS* 1951, pp. 27–46.

relationship between word and sentence, between the word-meaning and the sentence-meaning, remains a central problem. The Mīmāṃsā school developed elaborate canons of interpretation, and this organized body of linguistic doctrine later played an important part in the discussions of lawyers when interpreting legal injunctions, and on the other hand did much to stimulate the development of logic. In passing, one might note that the Mīmāṃsā preoccupation with the injunctions of Vedic texts with regard to religious duties was not without its effect on logical theory. The typical sentence with which they are concerned is in the imperative mood, and although later Indian logic deals largely in indicative sentences, the linguistic thought of philosophers in India was not so strictly confined to indicative propositions as that of logicians in the west. This influence can be traced in the terms *vidhi* and *pratiṣedha*, originally meaning injunction and prohibition, but in later texts occasionally used also to apply simply to positive and negative statements.

I do not propose here to give a detailed account of all the types of definitions of a sentence which occur in Indian writings; but mention should be made of the main types. As early as the *Kātyāyana-śrauta-sūtra* the Mīmāṃsā type of definition appears, in a purely ritual manual. A sentence, it is said, is that which is *nirākāṅkṣam* [1]: that is to say, something which has no requirement or expectation of words outside itself to complete its meaning. It is, of course, realized that the expectancy which holds between words in the sentence is a grammatical one, since, for example, a sentence containing a pronoun requires the evidence of a neighbouring sentence to identify the pronoun. Accordingly a commentator on this passage interprets the rule which follows, *mithaḥ saṃbaddham* "it is mutually linked (with other sentences)" to mean that it may be necessary to complete the meaning of the sentence by understanding words from preceding sentences. The fact that the requirement of *ākāṅkṣā* is a grammatical one was not always

[1] KSS i. 3. 2 teṣāṃ (*sc.* mantrāṇāṃ) vākyaṃ nirākāṅkṣam.

fully understood and we find even Bhartṛhari criticizing the Mīmāṃsā definition on the grounds that its *ākāṅkṣā* would imply that a passage of several grammatical " sentences " would have to be considered as one sentence.[1] Later the normal statement of the conditions for a sentence is that it must be a collection of words possessing *ākāṅkṣā*, *yogyatā* and *āsatti*. In effect, however, it is only the first which is of real linguistic importance. It is the desire or requirement of an individual word or words in the sentence for others to complete the meaning, the factor which distinguishes a sentence from a string of words " cow horse man elephant ". The second factor, *yogyatā*, really involves a judgment on the truth or falsity of a statement, or the sense or nonsense of a sentence. The example quoted most frequently as a breach of this condition is " He wets it with fire ". Into this category also fall such logical puzzles as " the round square ". The third condition, *āsatti* or *saṃnidhi*, is that the words should be contiguous in time. It is said that words uttered with the interval of a day intervening between each word cannot produce a sentence. This again is not a linguistic condition. It is of course only to be expected that the early stages of linguistic theory in India, as elsewhere, should show a certain *naïveté* and it is not surprising to find generally current in Indian philosophy, outside the writings of the professional grammarians, the idea that an individual word possesses an individual word-meaning or, in the case of nouns, that the word is the name of a thing. This view is fossilized in the regular philosophic term for thing or object, namely *padārtha*, literally " meaning of a word, that which a word means ".

The two main schools of the later Mīmāṃsā were sharply opposed in their theories of the sentence. The Bhāṭṭa school on the whole seems to preserve the more primitive attitude. According to them words have in themselves meanings, and as the words are uttered in a sentence, each word performs its task of expressing its meaning, and the sentence is the summa-

[1] VP ii. 3 ff. The grammatical sentence is here identified on the basis of the Vārttika definition, *eka-tiṅ* " possessing one finite verb ".

tion of these meanings. The Prābhākara school, on the other hand, held the more sophisticated theory that the individual words did not express any meaning until they were united together into a sentence. This was upheld by an appeal to the method whereby a child learns its own mother tongue. They pointed out that it was by hearing sentences " fetch the cow ", " fetch the horse ", and so forth, that the child came gradually to understand that the animal which he saw on each several occasion was, in fact, either a cow or a horse and that the action performed by his elders was the act of fetching. These two views were named respectively *abhihitānvaya-vāda* and *anvitābhidhāna-vāda*, terms which are troublesome to translate by concise English expressions. Roughly speaking, the first is the theory that the sentence is " a series of expressed word-meanings ", and the second is that the sentence is " the expressed meaning of a series (of words) ".

At the beginning of the second book of the *Vākyapadīya*, Bhartṛhari gives a list of definitions and quasi-definitions of a sentence. Five of these are grouped by the commentator under the traditional Mīmāṃsā designations. Thus the view that the sentence is a unified collection (*saṃghāta*) and the view that it is an ordered series (*krama*) are aspects of the *abhihitānvaya-vāda*; while the other three belong to the *anvitābhidhāna-vāda*. These are, that the sentence is defined by a verbal expression (*ākhyāta-śabda*) or by the first word (*padam ādyam*) or by all the words taken separately with the feature of mutual requirement or expectancy superadded (*pṛthak sarvapadaṃ sākāṅkṣam*). All these views, of course, imply the feature of expectancy, and the first and second are to be explained with reference to this feature, since the verb or the first word is only what it is in view of its ties with the other words in its own sentence. All these theories are adversely criticized by Bhartṛhari and they need not be considered in detail here. They are none the less of some interest as evidence of very vigorous argument and debate on linguistic topics in ancient India.

All these earlier discussions on the nature of the sentence

accept without question the fact that there are such things as words (*pada*), and that it is possible to attribute to these words something which can be called their meaning (*artha*). The most developed theory, namely that of the *anvitābhidhāna-vāda*, did to some extent foreshadow the later development in the grammatical schools, since it denied that the words conveyed a meaning except in the context of a sentence. Like the other views, however, this theory continued to regard the words as real and actual constituents of language. They were the units which in fact operated in linguistic communication, and since they were actually present, it merely remained for the grammarian to detect their presence by means of a grammatical analysis. The statement of procedure is quite in accordance with many modern statements. Thus a root or suffix is analysed out on the basis of a paradigm, and complete words were recognized on the basis of substitution in sentences. It remained for the professional grammarians, of whom Bhartṛhari is the leading ancient spokesman, to draw attention to the fact that although this process of analysis could give some account of language from the formal aspect, and though it possessed a distinct value for teaching and for the explanation of texts, it was entirely inadequate as a basis for a theory of language-meaning. To Bhartṛhari and his school words were, in fact, artificial constructions of the grammarian, and looked on from the point of view of language functioning in the world, they were unreal (*asatya*).

This extraordinary relegation of words to the realm of fictions is not at all easy to grasp at first sight, and I hope I may be pardoned if I dwell at some length on this topic, since it seems to me of considerable importance for fundamental linguistic theory, and hence also for philosophy, in so far as the latter may be a " critique of language ".

It is, of course, a commonplace in modern linguistics that the sentence is the primary datum. But such a statement may imply no more than an attitude comparable with the *anvitābhidhāna-vāda*. I suspect that it is the latter type of view which is often implicit in statements described as " analysis

at the word level ".[1] It demands something of an effort for the beginner brought up on an alphabetic system of writing to appreciate fully that a word is not a succession of letters or phonemes or segments which are then rammed together—" realized " has been a popular term in this connection. But on the contrary the word is what it is, and any account in terms of syllables, letters, phonemes, segments, prosodies, is merely an analysis, an attempt at *description* which may be more or less adequate. A similar effort, though perhaps a still more difficult one, is required to grasp the significance of Bhartṛhari's theory of the unreal nature of words. It is important to realize that this theory is not derived from *a priori* speculation, but is the result of a careful examination of what happens when we speak or listen in ordinary conversation. We do not in fact express ourselves or understand what is spoken in a series of meaning-units. After a sentence has been understood we may look back at it, analyse it into words, and maintain that we discern words in it. But if we do so during the course of the utterance itself, we are apt to lose the meaning of the sentence. The situation is perhaps analogous to the experience which some of us had at the recent International Congress of Linguists (London, 1952) when Professor Delattre played to us records of series of synthetic vowels, each vowel being made up of two musical formants. According to the method of focusing the attention, one could hear the record either as a series of vowels or as two converging musical scales, but not as both simultaneously. The essence of the matter lies in discriminating clearly between language in operation, and language-material considered and described by a grammarian. Bhartṛhari's view is simply that words and " word-meanings "

[1] Such an analysis may be justified where the forms of words are the chief concern ; but considerable contortions and an embarrassing set of fictions (e.g., the " central core of meaning " of a word) seem to be needed if we attempt to construct a descriptive statement of meaning on the basis of a word analysis. Such a wholesale rejection of word-meanings from scientific discussion does not of course mean the advocacy of the abolition of lexicography, but rather the recognition of the essentially practical and pragmatic nature of lexicographical statements of meaning.

belong to the latter sphere. They constitute an apparatus (not necessarily adequate) for the description of language events, but (roughly speaking) do not themselves " exist " in the events described.

This theory of the non-reality of words not unnaturally met with strong opposition from other Indian philosophers, and Bhartṛhari provides us with a number of the arguments which they brought against it. Typical of these is the argument from our experience of sentences which contain an unknown word. If for example a townsman, who has not previously heard of the bird in question, hears the sentence, " Fetch a cuckoo from the woods," he instinctively assumes that he has not understood the sentence because he does not know the word " cuckoo " ; and as the objector points out, he does know the words " Fetch . . . from the woods ". On Bhartṛhari's view, however, a better description of the situation would be that he cannot understand the word—that is, he cannot attribute a word-meaning to it—because he has not understood the sentence. This is, at first sight, perverse and paradoxical, but if patiently considered it will be seen to have much in its favour. It follows as a corollary that the piece " Fetch . . . from the woods " is not the same as similar phrases which occur in other sentences, for example, " Fetch a tree from the woods " ; and this situation Bhartṛhari unreservedly accepts.[1] It is of course clear that any meaning which we attribute to the fragment " Fetch . . . from the woods " is different in

[1] The objection is raised in VP ii. 74, and answered in ii. 94. The naïve person (*mūḍha*) thinks that he perceives the same meaning in the parallel portions of the two sentences (*vanāt* pika *ānīyatām* ; *vanād* vṛkṣa *ānīyatām*) ; but this, as the commentator remarks, is a misconception due to the serial nature (*krama-vaśāt*) of the linguistic sentence-symbol. [Thus for Bhartṛhari the naïve view is completely analogous to the suggestion that in *y* and *v*—due to the linear nature of our writing—there is a common part. Cf. also VP ii. 416 : just as the letters in a word are in themselves meaningless, so also are the words (*pada*) in a sentence.] Thus the substitution of the word *pika* for *vṛkṣa* produces an entirely different sentence ; and if there is doubt as to the meaning of one word, then the whole sentence is not understood (*pikādiyogāt sakalam evātyantavilakṣaṇam ; ekapadārthasaṃdehe sakalam evājñātaṃ vākyam ity ucyate*).

the two cases, since for example the method of transport will be different. At the most, therefore, we can say that the apparently identical fragments in the two sentences are similar but not the same.

On this view, the distinction between " formulæ " and " free expressions " is not so clear-cut as Jespersen would have us believe.[1] Of the former category, he says, " One may indeed analyse such a formula and show that it consists of several words, but it is felt and handled as a unit, which may often mean something quite different from the meaning of the component words taken separately." But this holds also for free expressions, and as Jespersen himself realizes elsewhere,[2] the " meaning of the component words taken separately " is something which cannot be determined apart from a context; and once this is granted, the distinction between the two categories amounts to little more than this: that a word-meaning analysis is more congenial to a grammarian in the one case than in the other. The apparently objective criterion upon which Jespersen relies to diagnose a free expression, namely, substitution in sentential functions, is as we have seen explicitly rejected by Bhartṛhari as being in fact illusory.

The occurrence of homophones in a language has always provided grammarians with an interesting problem, and almost all writers on the theory of grammar have discussed the factors which enable a language to tolerate such homophones without giving rise to ambiguities. Bhartṛhari gives a list of such factors, of which the most important are *vākya*, sentence-context, and *prakaraṇa*, situational context. As a typical modern statement of the same matter I might quote Sir Alan Gardiner: " The *polysémie* of words . . . does not matter in the least, because the hearer always has the situation to guide him in choosing that type of meaning which is appropriate to the context." [3] This statement conveys the position roughly; but it seems unlikely that the hearer

[1] O. Jespersen, *The Philosophy of Grammar*, p. 18 f.
[2] Op. cit., p. 66.
[3] TPS 1951, p. 60.

actually chooses between the various meanings or types of meaning of the *word*—he certainly does not do so consciously in his native language ; and it might be better to say that the hearer does in fact understand the sentence, and that this understanding, if afterwards utilized by the lexicographer (who also must " understand " the sentence), will enable the latter to state that, in such-and-such a situation, in such-and-such a verbal context, etc., the given word can be extracted analytically, and such-and-such a " word-meaning " attributed to it, this word-meaning being different from other meanings of the same " word " in different contexts and different situations. Further, it is necessary to recognize that when we talk of " the word x with meaning A ", " the word x with meaning B ", the identification of the two x's as " one word " is a mere practical convenience for lexicography and exegesis, something which belongs not to the material but to one method of describing the material, and that this method is not necessarily the best approach to a satisfactory description of language in operation.

We are apt to say from time to time, when struggling with a difficult passage in a foreign text, that we know all the words, but that the meaning of the sentence escapes us. This however is a delusion. In such circumstances we are presumably attributing to one or more of the words a " meaning " which has not been extracted from this particular context, and the obvious comment is that we do *not* know all the words, since our knowledge does not include the manner of their occurrence in the context in question. In practice, of course, a more general, if vaguer, aura of meaning extracted from *similar* contexts frequently gives us a sufficient clue ; but this leads us in the first place to an understanding of the meaning of the sentence as a whole, and only afterwards, by an analysis of this understanding, to the attribution of meanings to the individual words.

These considerations are of the first importance for those of us who are concerned with ancient texts and hypothetical forms in Indo-European or other conjectural languages. The

pursuit of the meanings of words in ancient texts is a highly skilled art, and the best work which has been done in this field has substantially added to our understanding of texts. But it is an art which requires a delicate tread. When we inquire into the meaning of a word in an ancient language we are really juggling with possible translations of sentences in which the word occurs, until we finally succeed in finding a mode of translation in which a single word or phrase of the English appears to correspond more or less to the ancient word in question. We then say that this English word or phrase is a meaning of the ancient word. Here we at least have in the texts sentences which by one means or another we understand after a fashion; and historical and comparative studies frequently enable us to glean from texts in related languages useful hints towards this understanding—though it is important to remember that these methods can at best protect us, as a near-scientific control, against specific errors, but can never prove a positive case. When we come to the prehistory of words, however, we have no sentences at all. The only conclusion that we can reach is that it is therefore impossible to talk of the meanings of, for example, Indo-European roots, except in a very different sense of the term "meaning". Indeed the vagueness of the meanings attributed to Indo-European roots by writers on this subject is an indication of the vagueness of what is meant by meaning in this context.

Having characterized the sentence as "a single undivided utterance" which conveys a single undivided meaning, Bhartṛhari proceeds to indicate what he understands to be the nature of this sentence-meaning. One cannot claim that what he says is a definition, and indeed the theory itself really implies that definition as ordinarily understood is an impossibility. The important point is that the sentence-meaning is grasped as a unity. The situation is compared to our apprehension of a picture. This we perceive as in some sense a unity, and although we can analyse the field of vision, and say that this part of the picture is blue, this part white, and so forth, none the less, we are normally aware of the

integrated whole. If on this analogy we proceed to explain the sentence on the basis of an analysis into words, we are in fact merely giving a commentary on it in what are ultimately other words, not words of the sentence itself. The idea here is closely similar to that expressed by Wittgenstein when he maintains that a proposition can only *show* what it has in common with the fact, and that this cannot be *said* in language, since any attempt to do so can only produce other propositions sharing the same logical form.[1] In the end the utmost that can be said of the meaning of a sentence according to Bhartṛhari is that it is grasped by an instantaneous flash of insight (*pratibhā*).[2] The same word is used in later times with reference to the insight of a great poet, and in such contexts may be reasonably translated as poetic genius. We are all, in fact, in a greater or lesser degree poets in our composition of sentences and in our understanding of the utterances of our fellows. And when we have understood a sentence, we cannot explain to another the nature of this understanding.[3] Although it is an acquired faculty, understanding a language is in its operation very similar to the instinctive behaviour of animals.[4]

It is unnecessary to labour the point that the meaning of

[1] *Tractatus*, 4.12–4.1212.

[2] VP ii. 119, 145.

[3] VP ii. 146: *idaṃ tad iti sānyeṣām anākhyeyā kathaṃcana: pratyātmavṛttisiddhā sā kartrāpi na nirūpyate*: "This (*pratibhā*) cannot in any way be explained to others in terms such as 'It is this'; its existence is ratified only in the individual's experience of it, and the experiencer himself cannot describe it."

[4] Bhartṛhari points the analogy in a pair of verses (VP ii. 151, 152):—

svaravṛttiṃ vikurute madhau puṃskokilasya kaḥ:
jantvādayaḥ kulāyādikaraṇe kena śikṣitāḥ.
āhāraprītyabhidveṣaplavanādikriyāsu kaḥ
jātyanvayaprasiddhāsu prayoktā mṛgapakṣiṇām.

"Who alters the note of the cuckoo in spring? Who teaches the spider to weave its web? Who impels the birds and beasts in their eating and mating, in their enmities, or in their flight, and in all the other actions determined by heredity?" The commentator on the latter verse in fact uses the term *pratibhā*, where we should say "animal instinct" (*pratiprāṇyāhārādikriyā niyatānādipratibhāvaśāt*, "The actions of animals, eating, etc., differing from one animal to another, are determined by a beginningless *pratibhā*," i.e., a *pratibhā* which is not learnt).

a sentence is not necessarily grasped from a knowledge of the dictionary meaning of the words. A few examples, however, may be given of the way in which sentences frequently produce an "implied" sense over and above what appears to be the literal sense. As Bhartṛhari's commentator points out, when a mother says, "The tiger eats little boys who cry," she does not in fact literally mean that there will follow an actual eating by a tiger. Rather she means what is meant by the sentence, "Don't cry."[1] Similarly, if a traveller says to his companion, "We must go, look at the sun," the meaning conveyed is not simply that of looking at the sun, but rather that the companion should realize how late in the day it is.[2] Again, in response to the command, "See that the crows do not steal the butter," not even a child is so literal-minded as to interpret it to mean that he can allow the dogs to steal the butter.[3] Examples of this sort are a direct invitation to formulate a theory on the hypothesis that a sentence can be said to have a literal meaning. This is something which in our normal linguistic discussions we are very apt to take as axiomatic; but it will be apparent after what has been said that from Bhartṛhari's point of view it is more of the nature of a postulate which we ourselves lay down as the condition for constructing specific systematic statements, as a practical convenience in handling the material. For Bhartṛhari himself, the examples quoted above were probably simply further indications of the unsatisfactory nature of a theory depending upon word-meanings. But the commentator does in fact interpret them on the basis of metaphorical transfer of meanings (*lakṣaṇā*). This was the standard interpretation in later grammatical writings, and we find for example the explanation that "crows" in the sentence quoted stands

[1] Commentary to VP ii. 322: *yathā rudantaṃ vyāghro bhakṣayatīti bālasyocyate, na tatra vyāghrabhakṣaṇaṃ vastusthityā saṃbhavi, kevalaṃ mā kudācit tvaṃ rodīr iti rodananiṣedha eva tasya kriyate . . .*

[2] VP ii. 312.

[3] VP ii. 314: *kākebhyo rakṣyatāṃ sarpir iti bālo 'pi coditaḥ: upaghātapare vākye na śvādibhyo na rakṣati.*

metaphorically for "crows and other animals which might steal the butter ".[1]

The theory of literal and metaphorical meaning was further extended in the 9th century by Ānandavardhana in the *Dhvanyāloka*. This is primarily a treatise on poetics; but as the basis of his æsthetic theory, the author carries out an elaborate analysis of poetic meaning. He had inherited from earlier theorists the distinction between primary and transferred or metaphorical senses of words (*abhidhā* and *lakṣaṇā*), and in addition to these he postulated a third potency of language which he called the capacity to imply or reveal a meaning other than the literal meaning (*vyanjanā*). The central term of the theory, namely *dhvani*, which has frequently been translated as suggestion, is said by Ānanda himself to be directly taken from the grammarians, though the relationship between his use of it and the use in grammar has perhaps been insufficiently clarified by modern writers. In brief, just as the sound of utterances (*dhvani* in the grammarians' sense) reveals the word (*sphoṭa*), so a poem is said to be *dhvani* when it reveals a meaning over and above the literal meaning and when the revealed or implied meaning has at the same time æsthetic value. In this theory we thus leave the more abstruse levels of philosophic linguistics, and come to more practical affairs, namely, the description and classification of meaning types as they occur in literature. Ānanda's work in fact seeks to unite the two traditions of the grammarians on the one hand and the formal rhetoricians on the other.

Ānanda's basic postulate is that utterances possess a literal meaning, and can also convey a further meaning. The scheme of classification which he adopts is fairly detailed and I can give only the outlines of it here. The main subdivision is into two types, first, the type where the literal sense is not intended (*avivakṣita-vācya*); and second, the type where the literal sense is in fact intended, but subserves the implied sense

[1] So for example Nāgeśa Bhaṭṭa, *Laghumanjūṣā*, p. 123 (*kākādi*).

(*vivakṣitānyapara-vācya*). The first of these is again subdivided into two: the type where the literal sense is completely set aside (*atyantatiraskṛta-vācya*), and the type where the literal meaning is shifted (*arthāntarasaṃkramita-vācya*). The first of these embraces what we should normally call metaphor; but it is, so to speak, motivated metaphor, where the metaphorically used words are employed with the definite intention of conveying their associations, or producing a striking effect. The second sub-variety is an interesting one, and covers cases where a word is used in an enhanced or diminished sense. Edgerton [1] compares this with the "emphasis" of the classical western rhetoricians, quoting Quintilian's definition; though in fact the point of view here is somewhat different. Typical examples are, "Only when favoured by the rays of the sun are lotuses *lotuses*"; "Let men continue to give the moon as a simile for her face; none the less, in the final analysis, the poor moon is the *moon*." [2]

Of much greater interest is the second main subdivision, where the literal sense is intended. The chief type here is that where poetic emotion or mood (*rasa*) is conveyed. It is of great interest to see the term *artha* "meaning", enlarged to include all that is conveyed by a poem. In accordance with the grammarians' views on the unity of the sentence-meaning, the *dhvani*-theory to a large extent operates in terms of larger unities and not individual words. At the same time it is possible from another point of view to indicate that the operative factor in producing the overtones of the implied meaning may on occasion be a single word or phrase. Thus in

[1] F. Edgerton, "Indirect Suggestion in Poetry: A Hindu Theory of Literary Aesthetics," *Proc. American Philosophical Society*, lxxvi, 1936, p. 700. Edgerton seems to imply that the whole of the *avivakṣita-vācya* category could be compared with *emphasis*, though in fact only the *arthāntarasaṃkramita* type is really analogous to the first of Quintilian's two varieties of *emphasis* (*Institutio*, viii. 3, 83 ff.).

[2] To bring out the idea, we can offer paraphrases such as "i.e., lotuses in the fullest sense of the word; lotuses with all the qualities of beauty which make them worth calling lotuses"; and in the second example, "i.e., *only* the moon and nothing else."

one example an old hunter says to a tradesman who is seeking merchandise, " How can you expect us to have elephant tusks or tiger skins, so long as my daughter-in-law wanders about the house with dishevelled hair ? " Here, says Ānanda, the *dhvani* arises not from the sentence as a whole, but from the phrase " dishevelled hair ", since this indicates to the hearer that the hunter's son, who ought to be out hunting, is in fact spending his time in dalliance with his newly wedded wife.[1] Similarly, when in a drama the king Udayana is told that the queen has perished in a fire, he calls to mind in his anguish her beauty : " *Those* eyes of hers glancing wildly round in terror . . ." Here the word " those " heightens the emotion conveyed by the stanza and underlines for the sensitive audience the poignancy of the king's memories of very different circumstances.[2] But though it is reasonable for analysis to take account of features of this sort, Ānanda fully realizes that in other cases we must take the whole stanza, or even the whole poem, as instrumental in conveying the poetic meaning.[3]

The extant Sanskrit writings on linguistic theory and on rhetoric form a very extensive literature, and the foregoing account is necessarily a mere outline sketch of some of the most interesting aspects of the Indian theories. One important point which I should like to stress is the realization of the Sanskrit rhetoricians of the need for an explicitly formulated theory of language-meaning as a basis for a theory of poetics. Most philosophic discussions of meaning confine themselves to a relatively small portion of language behaviour, namely, statements which describe or report a state of affairs—the propositions of the natural sciences, or, more generally, such statements as are traditionally handled by logic. This part of language possesses enormous importance and prestige, and is

[1] *Dhvanyāloka*, iii. 1, *vṛtti*.

[2] Ibid. iii. 4.

[3] See the discussion in the early part of book iii (summed up in iii. 2), where the types of *dhvani* are classified as arising from individual sounds (*varṇa*), words (or parts of words, suffixes), sentences, " stylistic structure " (*saṃghaṭanā*, i.e. the style measured by the incidence of compound words), or the whole poem or epic.

also the least difficult to deal with in a more or less clear fashion. But its treatment frequently suffers from a forgetfulness of the fact that propositions (or the formulae of symbolic logic) are none the less language; and I would suggest that a wider linguistic understanding is most desirable, both for philosophy and for poetic theory. Of colloquial language, Wittgenstein remarks[1] that it is "a part of the human organism and not less complicated than it. The silent adjustments to understand colloquial language are enormously complicated". This is sufficient to dismiss the subject from the consideration of logic, and it is of course quite reasonable that the logician should limit his field in this way. The linguist however must include within his survey all types of language behaviour, from logic to literature. Wittgenstein's implication clearly is that logic can construct a logical language which can be understood without these "silent adjustments"; and it has frequently been claimed in modern times that the aim of logic should be the construction of syntactical rules which will prevent nonsense. I trust that the present paper will show that former hope is certainly a vain illusion, and that the latter is probably so. Logic, mathematics, linguistics, science in general, all convey their messages in language, and this language, however technical, *cannot be understood* save in a manner which is fundamentally similar to the understanding of everyday language. As the ancient Indian might say, the utterances of the costermonger, the language of the great poet, and the formulæ of the atomic physicist are all in some sense manifestations of the same divine Vāk.

[1] *Tractatus*, 4.002.

BIMAL KRISHNA MATILAL

REFERENCE AND EXISTENCE IN NYĀYA AND BUDDHIST LOGIC*

CHRONOLOGICAL NOTES: Jñānaśrīmitra was one of the most important Buddhist philosophers in the 10th–11th century A.D. His works are collected and published under the title *Jñānaśrīmitra-nibandhāvali*. He was the teacher of Ratnakīrti, who summarized the views of his teacher in his own book. Udayana in his *Ātmatattvaviveka* mainly takes issues with Jñānaśrīmitra. Ratnakīrti is usually believed to have preceded Udayana. But I think Udayana and Ratnakīrti were contemporaries although Udayana was, perhaps, the junior contemporary. – Ed.

I. NON-REFERRING EXPRESSIONS IN LANGUAGE

Kumārila once made a very significant remark: Word or speech can generate cognition even of entities which are totally non-existent.[1] The fact that there are 'meaningful' and grammatically acceptable expressions in language which *purport* to refer to or to denote some entity or entities but which actually do not refer to anything in our world of experience, has very often proved a puzzle for philosophers and logicians. It is somewhat paradoxical to say that we refer to non-existent entities by such expressions as "the rabbit's horn", "the sky-flower" or "the son of a barren woman". All that we have here is a class of 'meaningful' expressions which share the same substantival structure in common and possess the grammatical property of a proper name in the sense that they can be successfully used in a context where a proper name might have been used. These expressions have been called 'vacuous' or 'empty' terms. A problem arises when such a term occupies the subject position in a sentence; a problem that is both logical and epistemological.

The understanding of a substantival expression or phrase does not imply that it has a reference; in other words, understanding of its meaning precedes the knowledge of whether or not the expression actually refer to any real entity. That is why we are justified in calling such expressions 'meaningful' although they fail to refer to anything.

An unusual strain of realism pervades our ordinary language in such a way that whenever we try to refer to or express an imaginary or fictitious object we feel constrained to admit some kind of 'relative'

reality for these fictions. If we are not happy about this admission, viz., that our fictions have some sort of 'relative' reality, the opponent tries to point out that we would otherwise face a logical problem which will be hard to explain away. To put it simply, it would be difficult, for example, to negate (logically) a statement whose subject is a fictitious object. The actual formulation of the antinomies of a two-valued logic will mainly concern us here. The awareness of these antinomies can be clearly discovered, as we shall see, in the writings of the Naiyāyikas and the Buddhist logicians of the 10th–11th centuries.

An initial note on the source material used in my discussion is in order. The Nyāya position as expounded here is mainly that of Udayana. The Buddhist position is that which Udayana regarded as the view of his Buddhist opponent. The idea of momentariness of all entities apparently belongs to the Sautrāntika school of Buddhism. Unfortunately no extant philosophical text of the Sautrāntika school where this problem is discussed is available to us. But a good account of the thesis of momentariness has been presented by Dharmakīrti and his followers. Udayana becomes involved in the argument concerning the status of empty terms while he is repudiating the logical proofs of the thesis of momentariness. In the first chapter of his *Ātmatattvaviveka* (from which I have largely drawn my material), Udayana is mainly concerned with the Buddhist views as set forth by Jñānaśrīmitra in his *Nibandhāvali*.

II. THE RIDDLE OF 'NON-BEING'

The Nyāya school claims that a sentence whose subject term does not refer to anything stands in need of some philosophic paraphrasing. A sentence is a representation of some cognitive state. A cognitive state, i.e., a judgmental one, usually attributes a property to a subject or qualificand. And this attributable property can be called a qualifier. Now, a cognitive judgment fails if it lacks a subject to which it can attribute some property. Hence, a sentence which apparently has a non-referring expression as its grammatical subject undergoes a philosophical paraphrasing in the Nyāya system so that it can properly represent some judgmental (or qualificative) cognitive state. A judgmental cognitive state may be erroneous where the representing sentence will be regarded as false. If a cognitive judgment is right, the corresponding sentence will

be true. Thus, knowledge and error are the epistemic counterparts of the truth and falsity of the sentences that express the corresponding cognitive states. Proceeding along this line, the Nyāya realism almost pre-judged the issue and tried to show that a sentence with a non-referring expression as its subject should be traced back to some kind of erroneous cognitive state and should be explained accordingly. In other words, Nyāya ruled that these sentences were demonstrably false. Bertrand Russell seems to have tried to analyse such sentences in much the same way. It has been shown by him that these sentences can be paraphrased into such logical forms as will make them patently false.[2]

Apart from this apparent similarity, the philosophic motivation of Russell was, perhaps, not very different from that of the Nyāya school. Among other things, Russell was worried about ontology. Thus, he wrote

> It is argued, e.g., by Meinong, that we can speak about 'the golden mountain', 'the round square', and so on; we can make true propositions of which these are subjects; hence they must have some kind of logical being, since otherwise the propositions in which they occur would be meaningless. In such theories, it seems to me, there is a failure of that feeling for reality which ought to be preserved even in the most abstract studies.[3]

Whether Meinong did actually postulate such a theory or not can be determined from his doctrine of the independence of what he calls *Sosein* from *Sein*.[4] Roughly speaking, Meinong contended, arguing for a very broad sense of the term 'object', that the object's having some property or characteristic is not affected by its being existent or non-existent. Thus, although the round square does not exist because it cannot exist, it is possible to make true assertions about it or to predicate some property of it. In other words, we might truly say, "The round square is round and square." Even at the risk of a paradox, Meinong adds, one can very well say, "There are objects of which it is true to say that there are no such objects." To the criticism that the law of contradiction would be violated if the sentence "The round square is round and square" is held to be true, Meinong replied by saying that the law of contradiction holds only of what exists, or is real, and is thus not violated by the sentence in question.

Even if we leave Meinong aside, we can conceive, following Quine[5], of some fictitious philosopher like McX or Wyman, who would be

willing to countenance at least subsistence, if not existence, to such entities as "the golden mountain". In other words, these philosophers would posit a world of 'unactualized possibles', but would resort to the doctrine of meaninglessness when faced with such self-contradictory expressions as 'the round square' or 'the son of a barren woman'.

Part of the difficulty connected with sentences with non-referring expressions as their subject terms can be transformed into a logical riddle. This riddle has a long history in the West and it is usually nicknamed *Plato's beard.* In India the story is more or less the same. The riddle of 'non-being' in some form or other stayed alive in the controversies between the Buddhists and the Nyāya philosophers down the centuries.

III. THE STATUS OF 'EXAMPLE' IN INDIAN LOGIC

I shall explain presently the Indian version of the riddle of non-being following Udayana.[6] Some acquaintance with the development of Indian logic during the time of Jñānaśrīmitra and Udayana is necessary for understanding the Indian version. The Buddhist believes that the logical demonstration of the proof of his thesis (viz., everything that exists is momentary) is possible. Thus, he tries to formulate a philosophic argument in the standard logical form which is mainly non-deductive. Unfortunately, modern interpreters have sometimes tried to reduce the argument into a deductive inference.

A few remarks about the nature of Indian logic may be in order here. Logic developed in India out of two slightly distinct traditions: (1) *vāda* tradition, i.e., tradition of debate which was concerned with dialectical tricks, eristic arguments and sophistry, (2) *pramāṇa* tradition, which was concerned with the criteria of empirical knowledge, the accredited source of knowledge. On account of this genesis, Indian logic imbibed an epistemological character which was never removed throughout the history.

The model of reasoning with which the Indian logicians were chiefly concerned was not *purely* deductive. Modern interpreters of Indian logic have seldom realized this point (for such oversight, see Randle, 1930). As a result there have been some confusing and futile attempts to reduce the arguments studied by the Indian logicians to Aristotelian

syllogistic model. It should be noted that inspite of the neatness, elegance and precision of a deductive system like that of Aristotle, it is undeniable that a good deal of our actual reasonings may not follow the deductive pattern. The reasoning of an experimental scientist, a historian or an ordinary man trying to ascertain the truth of a particular matter, is a reasoning from what we may call 'evidence' to what we can call 'conclusion'. Even most of our philosophical arguments, where we try to depend more or less upon empirical evidences, belongs to this type of inference. A purely deductive model is not always appropriate to this kind of reasoning.

In a deductive reasoning, the so-called premises *entail* (in some acceptable sense of this term) the conclusion in such a way that if we accept the premise we cannot afford to avoid the conclusion without the risk of contradicting ourselves. In a non-deductive argument, the conclusion is not *entailed* in the same sense by the premises. We should better say that our evidences or 'premises' here justify or support the conclusion. Evidences may be good or bad, and the corresponding argument may be sound or unsound. Thus, it seems to be better to talk in terms of soundness and unsoundness of this type of arguments (instead of talking in terms of their validity or invalidity).

The general form of the arguments studied by the Indian logicians is: *A* is *B* because of *C*. The middle term or the 'reason' *hetu* *C* can be either adequate or inadequate (instead of being strictly valid or invalid). An adequate middle term or 'reason' will establish the conclusion and the argument will be sound. If the middle term is not adequate, the conclusion will not be established and the argument will be unsound. Ordinary conversation and philosophical treatises provide millions of examples of this kind of argument.

In a non-deductive inference, e.g., "It must have rained *because* the ground is wet", the second part is believed to be the *adequate* ground for accepting the first. And most Indian logicians tried to frame the rules of logic from the paradigm cases of sound inference of this kind. But the neatness of a deductive system can easily capture our mind. We may thus be tempted to introduce an additional premise so that these arguments will be deductively valid. We can resort to the theory of 'suppressed premises' and decide that we are dealing in fact with deductive arguments in all these cases. But this seems at best to be a distortion and at worst the

demolition of the original structure of the actual argument. That we are inclined to reduce these arguments to deductive arguments proves that we are somehow assured of the *soundness* of these arguments much in the same way we feel secure about a deductively valid conclusion. But this reduction, even if it is sometimes justified, throws very little light upon the original problem, e.g., how can we reasonably draw, as we obviously do, conclusions from so-called premises which do not strictly entail them? We merely direct our attention to a slightly different and a bit narrower question: How do we establish general propositions such as these 'suppressed" premises? Most of these premises are not admittedly necessary propositions, i.e., analytic judgments. They are in some sense 'synthetic' propositions representing general beliefs which come from common experience.[7] The early history of Indian logic seems to have been a search for an adequate model which will explain both deductive and non-deductive, empirical, inferences.

That it is often misleading to introduce a 'suppressed' general premise in some cases can be easily shown by applying the same method to a dubious case, i.e., an unsound non-deductive argument: speech sound is permanent because it is audible (5th type in Diṅnāga's table of 'reasons'; cf. his *Hetucakraḍamaru*). Should we construe this case as having a general premise "Everything that is audible is permanent", and thus treat the argument as deductively valid with a false conclusion from a false premise? Or, should we construe our general premise as "Nothing that is audible is permanent", and thus make the argument deductively invalid? The truth is that in either case we are turning our attention from the actual structure of the argument to our experience and general belief. In fact we prejudge the case seeing that the conclusion is definitely false.

The best thing would of course be to do neither. The Indian logician says that you cannot state your general premise or the universal proposition unless you can cite a supporting 'example' (*dṛṣṭānta*). A supporting 'example' can be of two types: an 'agreeing example' (*sādharmya-dṛṣṭānta*) and a 'disagreeing example' (*vaidharmya-dṛṣṭānta*). An 'agreeing' example is a case where both the 'reason' and the 'inferable property' (*hetu* and *sādhya*, comparable to Aristotle's middle term and major term respectively) are present together. This will at least show that neither the 'reason' nor the 'inferable property' can be fictitious. A

'disagreeing' example is a case where both the reason and the inferable property are absent.

With this prelude we can proceed to the heart of the controversy between the Buddhist and the Nyāya logicians. The thesis of momentariness which the Buddhist wants to prove is a universal proposition:

Whatever exists is momentary.

Its contrapositive version is:

Whatever is non-momentary does not exist.

The 'reason' in this case is 'existence', and the 'inferable property' is 'momentariness'. Now, to prove the invariable connection between the 'reason' and the 'inferable property', the Buddhist logician must cite, in the first place, some 'agreeing' example where the two properties (the 'reason' and the 'inferable property') and their connection are instantiated. But the 'agreeing' example will not be enough unless one can support it by the citation of what is called a 'disagreeing' example. A 'disagreeing example' is something that instantiates the contraposed version of the main thesis. According to the acceptable form of demonstration, the Buddhist, in order to prove his thesis, must cite not only an 'agreeing example' but also a 'disagreeing example' for making his argument sound and more convincing.

Although the proof here consists in the citation of a 'disagreeing example', the conclusion should not be regarded in any way unsound or uncertain. The whole point of citing a 'disagreeing example' is to show the actual absence of any counterexample. If a counterexample can be found where the 'reason' is present but not the inferable property, then the supposed thesis is immediately falsified. Thus, the soundness of the conclusion depends upon this absence of any counterexample, or our failure to discover any counterexample.

Now, a difficulty arises when we try to find a 'disagreeing example' for the above thesis (viz., an instantiation of the contraposed version given above). To cite an example of unreality would be in some sense to contradict one's own position because it would be like saying that there is an example (or, an entity, if we like) which, according to us, is unreal,

i.e., non-existent or a non-example. An 'example', or what is called a *dṛṣṭānta* in Indian logic, must be a well-established case admitted by both sides in a philosophic debate, the opponent and the proponent. It is implied here that there is admittedly an accredited source or 'means of knowledge' (*pramāṇa*) with which we can establish the example. Thus, an example can never be an unreal entity. This will finally lead, according to Nyāya, to the destruction of the Buddhist claim that he can prove 'logically' the momentariness of everything.

IV. THE NYĀYA-BUDDHIST CONTROVERSY

It should be made clear at this point that neither the Nyāya nor the Buddhist wishes to countenance the world of strange entities like the golden mountain or the rabbit's horn. But the difference lies in their method of approach to the problem.

Confronted with the Nyāya criticism (noted in the last section), the Buddhist does not so easily give up his hope of proving his thesis of momentariness. He tries to point out that the position of the opponent, i.e., the Nyāya position, also involves a self-contradiction. By saying that an unreal entity cannot be used as an example, or, cannot be used as the subject of a proposition, the Nyāya actually mentions 'an unreal entity' in his speech-act. And this can be shown to imply a proposition whose subject would be an unreal entity or a non-existent fiction. Thus, for example, Nyāya would have to argue: the rabbit's horn is a non-example because it does not exist. And this will contradict the original Nyāya position that fictitious entity cannot be the subject of a proposition. Thus, the Buddhist claims to have proved his thesis of momentariness even at the risk of an implicit contradiction because otherwise the rejection or criticism of his argument would lead the opponent into a patent self-contradiction.

Udayana remarks here as follows:[8] The Buddhist wants to avoid a patent self-contradiction (like saying "the rabbit's horn cannot be the subject of any proposition because it does not exist") and thus allows that certain speech-acts, and consequently certain sentences, about fictitious entities like the rabbit's horn are quite in order. The Buddhist, in fact, does not want to accept the Nyāya position that the subject term of a sentence must refer to something actual (or real), and if it does not,

the whole sentence stands in need of some philosophic paraphrasing. Thus, for the Buddhist, "The rabbit's horn is sharp" is a normal sentence which we may use in our discourse for various purposes. One of such uses is made when we cite an example of a non-entity, viz.,

"The rabbit's horn is non-momentary and also non-existent."

Nyāya, on the other hand, wants to exclude from logical discourses any sentence which will ascribe some property (positive or negative) to a fictitious entity. Vācaspati remarks that we can neither affirm nor deny anything of the fictitious entity, the rabbit's horn.[9] Thus, Nyāya apparently agrees to settle for a 'superficial' self-contradiction because, in formulating the principle that nothing can be affirmed or denied of a fictitious entity like the rabbit's horn, Nyāya in fact is violating the same principle. Nyāya feels that this 'superficial' self-contradiction is less objectionable because it can somehow be explained away while the Buddhist approach to the problem is deplorable because it will eventually lead us to reject any discrimination between actual and fictitious entities.

To simplify the matter for discussion, we might talk in terms of exemplified and unexemplified properties (borrowing the terms of Carnap with suitable modifications[10]) instead of talking in terms of referring or non-referring expressions. A referring expression, be it a name or a description, can be said to signify a property (in a broader sense) which is exemplified by the individual it names or the individual that answers the description. A non-referring expression signifies a property, or rather a complex of properties, which is not so exemplified. An unexemplified property (or, property-complex) may be also called an *empty* property (the term being borrowed from Carnap).

The Buddhist argues that it is possible to talk about fictitious objects or empty properties because, otherwise, one cannot even deny successfully their existence. Thus, it is in order when we purport to attribute empty properties to fictitious individuals or when we use a fictitious individual as a 'disagreeing example' or even as the subject of some negative proposition. A putative answer to 'the riddle of non-being' can be given as follows: an utterance like

"The rabbit's horn does not exist"

is perfectly all right because we are only denying existence or 'actuality' to a fictitious entity. Similarly, the utterance

"The rabbit's horn is not sharp"

is also in order because here we simply refuse to attribute a property, viz., sharpness, to a fictitious object. One may also add that the correctness or soundness of these utterances can be authenticated by our accredited means of knowledge (*pramāṇa*). We can neither perceive the rabbit's horn, nor test its sharpness by direct perception, nor even can we infer its sharpness on any logical grounds (such as knowing that it cuts hard objects easily).

But if we accept empty subject terms in order to make the denial of existence to fictitious entities successful we will invite other logical problems. Udayana points out that if the negative sentence

"The rabbit's horn is not sharp"

is held to be true because it is authenticated by our accredited means of knowledge then the affirmative sentence

"The rabbit's horn is sharp"

can be argued to be true also on similar grounds. Since the rabbit's horn cannot be known through any means, no one can establish that it is not sharp. As long as it is not established that it is not sharp our claim that it is sharp should also hold.

Udayana notes

> If nobody has ever seen or known a person called 'Devadatta' anywhere at any time, then the question "Is Devadatta white, or is he black?" results simply from some outrageous perversion. And if, without caring to understand what this is all about, someone answers the question by saying "he is white" another person has as much right to answer by saying "he is black." Nothing is established by such questions and answers. In each case, the lack of our means of knowledge (to establish the subject term) and (the consequent possibility of) self-contradiction remain the same.[11]

The point that the Nyāya tries to make through this criticism is this. If we allow statements about fictitious entities in a logical discourse – statements by which we purport to attribute some property (positive or

negative) to the fictitious entity – we will have no way of deciding whether they are true or false, for it will never be possible to experience the fictitious entity through any accredited means of knowledge. But the Buddhist argues that we do utter statements about fictitious entities. We tell fictitious stories, and we can conceive of unreal entities like the rabbit's horn or the hair of a turtle. It is not always the case that we have to *know* a thing before we may make statements about it or attribute some property to it. A simple cognition, an error, a conceptual construction, or even a deliberate attempt at fiction, will be enough to justify our speech-acts about fictitious entities. And statements about fictitious entities like the rabbit's horn may also serve some useful purpose in a logical discourse.

In fact the Buddhist proposes a kind of pan-fictional approach to the world of phenomena. Thus he believes that language creates fictions and the cognitive element in language can very well be the cognition of a fiction. In other words, an unreal entity can be as much the object of a cognitive state (i.e., an erroneous cognitive state) as it can be expressed by some non-referring expression in language.

V. THE EPISTEMOLOGICAL SIGNIFICANCE OF THE CONTROVERSY

Let us consider

A "The rabbit's horn is sharp."

Nyāya says that here the subject term itself can be treated as a complex term, in fact, a 'disguised' sentence, in which we are attributing either the property of having horns to a rabbit, or the property of belonging to a rabbit to the horn. As long as this is a wrong attribution, the whole sentence should be regarded as false because it can only represent a possible error, i.e., an erroneous cognitive state.

The issues involved here are eventually connected with an epistemological problem, i.e., the problem of explaining an erroneous cognitive state. Nyāya contends that our error consists only in our wrong attribution of a property to a subject. But the property itself or the subject itself must be a *real* entity of this universe. The Buddhist claims that an error does not necessarily consist in the wrong attribution. According to a section of the Buddhists (viz., the proto-Mādhyamika),

an error consists in making an unreal thing appear as real. The Nyāya theory is called the *anyathākhyāti* theory of error, while the proto-Mādhyamika view is called the *asatkhyāti* theory of error.

Let us consider the situation of a perceptual error for the purpose of comparison. When someone perceives (erroneously) a snake in a situation where only a rope is present in the visual field and hence is in contact with one's sense organ, we can say that he has an erroneous perception of the snake. In fact we can show him that what he saw was not a snake but actually a rope by examining the object further. But if he is dense enough (or, philosophic enough) to ask "It was not *what* snake?" we will be in trouble because it will be difficult to deny successfully the existence of a non-existent or imagined snake. Whether or not he has seen a *real* snake in life before is just beside the point here. The particular snake which he *thought* he perceived a moment ago cannot be the subject of a successful denial because if that particular snake (or, perhaps, we should say, the snake particular) is totally non-existent then the denial of its existence will be pointless, and if it is supposed to have some sort of existence (i.e., 'subsistence') then the denial will be contradictory. One may resort to such an ambiguous position as the following: The particular snake I experienced a moment ago is not on the same level of reality as this piece of rope which I am experiencing now, but, nevertheless, that particular snake-fiction is not entirely unreal because otherwise I would not have experienced it a moment ago. This will invite a host of philosophic questions about the nature and criteria of reality which we need not go into here. Our purpose will be served if we remember the metaphysical background in which the Nyāya and the Buddhist theories of error were developed.

It will be consistent for the Buddhist to say that the object of an erroneous cognition (or of a dream cognition), viz., 'this is a snake', is unreal. The following judgment, viz., 'this is not a snake', which destroys the error reveals simply the unreality, i.e., nonexistence, of the snake. Suppose we accept causal efficiency as our criterion of reality. A *real* entity may be the object (*viṣaya*) of a perceptual cognition by being somehow causally related to the production of that perception. But if something has become the 'object' (*viṣaya*) of a cognitive state, it does not follow that it must have been causally related to the production of that cognitive state. For example, the 'snake' grasped by an erroneous

perception of the form 'this is a snake' becomes the 'object' of this cognitive state without apparently being causally related to it. Thus, a cognitive state is an intentional act where a nonexistent entity can very well be revealed as the 'object'. This is, in brief, what is implied by the *asatkhyāti* theory of error.[12]

The Nyāya reply to this is somewhat theory-bound. Nyāya realism does not admit that a *totally* fictitious entity can be the 'object' of any cognitive state, even of an error. Nyāya attempts to construct a theory of reality, a conceptual scheme, that consists of some interconnected basic categories (viz., the scheme of Vaiśeṣika categories). Thus, it is asserted that corresponding to each fundamental element of thought or cognitive state there is a fundamental element of reality. The socalled fiction is always constructed out of real elements. And these real elements can be categorized under some basic principles.

A judgmental cognitive state combines two or more elements of reality, and a sentence expresses such a state. An error or erroneous judgment combines two elements of reality which are not actually so combined. To be more precise, an error combines two elements of reality that are not so combined in reality. One might say that the verbal expression of an error purports to refer to a fictitious entity. But Nyāya hastens to add that the fundamental elements that go to constitute the object-content of an error are all real elements or real properties exemplified somewhere in the world. Even the oddest imagination can be broken into elements each of which is not just 'airy nothing' but 'has a local habitation and a name', i.e., is real.

Nyāya criticizes the *asatkhyāti* theory of the Buddhist by saying that what becomes the 'object' of a cognitive state is also, in some acceptable sense, causally related to that cognitive state, and that it is absurd to suggest that a fictitious non-entity can cause anything. Thus, in the case of perception, what becomes the 'object' causes, at the same time, the perception itself as an event. Even a perceptual error has an 'objective basis' (*ālambana*) which causes such an error. In the case of wrong inference also, we do not deal with fictions. We are either mistaken about our initial perception which lies at the root of such an inference or we fail to apply the rules of correct inference. In the case of an erroneous cognitive state derived from someone's utterance, we should analyse its object-content also in a similar fashion.

It may be argued that the expression 'the rabbit's horn' is understood to refer to some nonexistent entity because no such thing as the rabbit's horn is found in this universe. Nyāya meets the objection in this way. Like perception, language is also a source of knowledge. Through words or a word-complex, we know *atomic* objects. This is called conception. And from sentences we know *facts* or object-complexes. This is called judgment. Thus, the situation is comparable to that of perception where we can have either judgmental perception of facts or 'simple' perception of (atomic) objects. Error arises in the case of judgmental or qualificative perception only (see Matilal, 1968a, p. 16f). It is impossible for a non-qualificative 'simple' perception to be wrong about anything unless we allow that the 'simple', unitary (indivisible) object-content of such a perception can sometimes be *totally* fictitious having no 'objective basis' (*ālambana*) in the objective world. But as far as Nyāya is concerned this possibility is ruled out. A qualificative perception can be described as '*a* sees that *x* is *P*', and hence there arises the chance of its being erroneous in case the property expressed by '*P*' is not actually present in *x*. Here, *x* is the *ālambana* 'objective basis'. The property expressed by '*P*' may be a *simple* one, or, it may be a complex one in which case it should be analysable into *simple* components.

VI. THE IMPLICIT NYĀYA SEMANTIC PRINCIPLE

Nyāya asserts that a simple, non-complex property can never be *empty*. We cannot conceive of a simple, non-complex property which is not instantiated by anything in this world. Acceptance of this principle is almost axiomatic in the Nyāya system. Thus, a complex property is held to be analysable in this system into 'simple' components which must be individually instantiated somewhere in the actual world. When we say that a particular property is empty, we mean that the combination of a number of simple *real* (i.e., non-empty) properties is not as such exemplified in the actual world (at a given time). One may combine two contradictory or mutually exclusive properties in which case the combination will be expressed by a self-contradictory expression. One may also combine two non-exclusive, but hitherto uncombined or unconnected, properties in which case it will be an empty property expressed by a non-referring expression. "The son of a barren woman" will be an example

of the first kind, "the rabbit's horn," "a man who is twenty-feet high," and "the hair of a turtle" are examples of the second kind. (Note that one has to take the time of utterance also into consideration: "the present king of France" was not a non-referring expression when France was a monarchy, nor "the first man in the moon" is so now since the time Neil Armstrong landed on the moon.)

A problem will apparently arise if someone insists that a non-referring expression such as "the rabbit's horn" or "unicorn" is not the result of a combination but should be treated as an 'atomic' non-divisible expression. In other words, whatever is signified by such an expression could be regarded as a simple, indivisible property. In that case, one can say that we do utter expressions signifying simple, indivisible properties which have no exemplification in the world of experience. Udayana anticipates this objection. He adds that if for any perverse reason one wishes to admit expressions in our language, which signify simple but fictitious (empty) properties, one will have to find a way to distinguish between two different expressions which signify two empty (but presumably different) properties.[13]

To explain: Unless we allow the meaning of "unicorn" to be indistinguishable from the meaning of "goblin" (or, from that of "the round square") we cannot hope to prove that these expressions signify 'simple' but different *empty* properties. The meaning of such expression cannot, in the first place, be learnt by ostensive means. We depend upon descriptions to make their meanings understood. Thus it is that the apparently unitary expression finally resolves itself into a series of descriptions which will, in their turn, signify complex properties.

The way Nyāya deals with this problem seems to be close to what Carnap has to say about his artificial language system S_1[14]:

> Generally speaking, it must perhaps be admitted that a designator can primarily express an intension only if it is exemplified. However, once we have some designators which have a primary intension, we can build compound designators out of them which express derivative, complex intensions, no matter whether these compound designators are exemplified or not.

Nyāya believes that there is a class of 'simple' properties (which are exemplified and) which are expressed by a class of 'simple' (non-compound) designators. But compound designators express complex properties which may or may not be exemplified.

Following the Nyāya principle we can resolve

A "A rabbit's horn is sharp"[15]

as follows: "(1) Something is characterized by horn-ness and (2) it is characterized by the property of belonging to a rabbit and (3) it is also characterized by sharpness." Of these constituents, if (1) is true, (2) cannot be true, and vice versa. And (3) can be true or not true according to whether the subject (whatever that is) is sharp or not. But, in no case will the conjunction be true. And, we can resolve

B "A rabbit's horn is not sharp"

as follows: "(1) Something is characterized by horn-ness and (2) it is characterized by the property of belonging to a rabbit and (3′) it is also characterized by the absence of sharpness." This will be equally *not true* (*a-pramā*) as before because both (1) and (2) cannot be factually true together. (3′) will be true or false according to whether its supposed contradictory (3) is false or true. Thus, the law of contradiction is not violated because B, as a whole, is not strictly the contradictory of A (when both of them are thus analyzed). The relation of contradiction may hold between (3) and (3′).

One may note here that Russell has declared that a sentence of type B is ambiguous. He introduces the notion of "primary" and "secondary" occurrences of descriptions to explain this ambiguity.[16] The Nyāya analysis given here seems to forestall the problem of double interpretation by declaring even B-type sentences as not true.

VII. INTERPRETATION OF EXISTENCE AND NEGATION

Using the customary symbols and truth tables of modern logic, we shall try in this section to understand the Nyāya and the Buddhist principles in a somewhat systematic manner. The Buddhist claim may admit of the following analysis: Existence can be predicated in the object-language presumably by some expression like:

$$(\exists x)\ (x=a).$$

This is roughly similar to Quine's method of treating such sentences as "*a* exists" (viz., "Pegasus exists"). When this sentence is false it incorporates a non-designating term '*a*'.[17]

In order to explain the Nyāya principle we have to use a notion which is usually called 'semantic ascent'. Let us use '*h*' to express "it is the case that" (cf. Frege's horizontal); now, where '*P*' stands for any sentence we can have the following truth table:

P	hP
T	T
F	F
I	F

(Here 'T' means 'true', 'F' means 'false', and 'I' means 'neither true nor false' i.e., 'indeterminate'.) Existence can be expressed via semantic ascent by some expression like:

$$h(\exists x)\ (x=a).$$

Now, the Nyāya manoeuvre roughly consists in this. What is ordinarily not determinate, i.e., neither true nor false, is transformed into a falsity via semantic ascent. The principle can be stated as:

IF 'Fa' or 'a is F' is determinate (true or false) THEN $h(\exists x)\ (x=a)$.

Its contraposed version would be:

IF $\sim h(\exists x)\ (x=a)$ THEN 'Fa' or 'a is F' is not determinate.

In fact, instead of talking about the rabbit's horn we are talking by semantic ascent about the sense of 'the rabbit's horn'. We are not reading the existential statement as 'There is something x which is identical with the rabbit's horn', but as 'It is the case *that* there is something x which is identical with (the sense of) *the rabbit's horn*'. We should also note that both the above conditional and its contrapositive are determinate even if their antecedents are true.

My present expedient is largely derived from Timothy Smiley's formalized outline in his 'Sense Without Denotation'.[18] Smiley introduces the singulary connective 't' (comparable to our '*h*'), which is governed by the rule: the value of the sentence tA shall be *T* if the value of the sentence A is *T*; otherwise it shall be *F* (Smiley, 1960, p. 128). Smiley then introduces the distinction between 'primary' and 'secondary' occurrences of terms and a corresponding distinction between two kinds of predicates. Particularly interesting is his contrast between what he calls the primary negation-sign and the secondary negation-sign. In the case of primary negation, a sentence and its negation are contraries in that they cannot be simultaneously true. In the case of secondary negation, on the other hand, a sentence and its negation are contradictories, for always one and only one of them is true (Smiley, 1960, p. 129). Thus, a satisfactory interpretation of existence statements and their negations eventually leads to the clarification of different senses of negation, to which we shall now direct our attention.

It will be convenient to explain the difference between the Nyāya method and the Buddhist method of interpreting the affirmative and the negative sentences with empty subject terms by making use of the notion of 'choice negation' and 'complementation' or 'exclusion negation'. A choice-negation of a proposition '*a* is *F*' or '*Fa*' will give us a falsity if '*Fa*' were true, and a truth if '*Fa*' were false. But if '*Fa*' is indeterminate (e.g., "The rabbit's horn is sharp"), its choice-negation will also be indeterminate. In fact, the choice-negation presupposes a category-framework. If a predicate 'blue' is denied of the subject 'the pot', we are prepared to locate the subject in the category of coloured objects. If the proposition is indeterminate (i.e., neither true nor false) because the subject term is empty, its choice negation will also give another indeterminate proposition.

An exclusion negation ignores the category-framework. Let '$\sim$' represent choice negation and the horizontal over the letter represent exclusion negation or complementation. Writing '*h*' for "it is the case *that*" (cf. Frege's horizontal), we can define exclusion negation as follows:

$$`\bar{P}' =_{\text{df.}} `\sim hP' = \text{`it is } not \text{ true that'.}$$

Writing 'T' for 'true', 'F' for 'false', and 'I' for 'neither true nor false' as before, we can set up the following truth tables:

Choice-negation		*Exclusion-negation*	
P	$\sim P$	P	$\bar{P}$
T	F	T	F
F	T	F	T
I	I	I	T

Thus, '*Fa*' may be indeterminate while its exclusion negation is true.

My contention is that Nyāya seems to be favouring (vaguely) a sort of choice-negation and this is no wonder when we think that Nyāya has always chosen to work within some (i.e., the Vaiśeṣika) category-framework. But the Buddhist seems to be favouring a sort of exclusion negation and therefore rules that negation of the indeterminate is true. In fact the Nyāya concept of negation is more radical than what the idea of choice negation implies.

The Nyāya and the Buddhist position might be encapsulated in the following two alternative model theories:

For Nyāya, a model of the language is a pair $\langle D, f \rangle$ where the first component, D, is any non-empty set of actual things, i.e., things that are there and can be experienced or established by some accredited source of knowledge (*pramāṇa*). The second component, f, is a function assigning sets to singular terms and predicates as follows:

$f(a)$ is a unit set for each singular term a.
$f(P)$ is a non-empty set for each 'non-complex' predicate letter P.

For the Buddhist, a model of the language can be stated as above except for an expanded ontology. In other words, D is taken here to be a set of Meinongian objects, some of which are actual and others are fictional. The following thesis is rejected by the Buddhist but maintained by the Nyāya:

$T_1: f(P) \neq 0$ (where 'P' is a non-complex predicate).

We can summarize Udayana's reasons for accepting T_1 in this way.

(a) If $f(P)$ were empty, then the *sense* of P cannot be learnt.

(b) If $f(P) = f(Q) = 0$, then the senses of P and Q cannot be distinguished.

Nyāya also accepts a second thesis:

T_2: Only some complex predicates can be empty.

The suggestion is that logically non-complex concepts can be *learnt* only in connection with its exemplification. Thus, "unicorn" could not be understood, i.e., would be unintelligible, unless it were logically complex. Thus, it should unpack as a combination of several simple, non-complex concepts or properties.

VIII. THE PAN-FICTIONAL APPROACH OF BUDDHISM

In order to escape the complexity of multivalued logic, Russell extended the concept of false statement to include sentences with empty descriptions as their subjects. He was rightly criticized by Strawson on the ground that in ordinary language the existence of some thing denoted by the subject of a sentence is a necessary condition of its utterance's being true or false.[19] Strawson's theory can, in fact, be systematically developed only with the assumption of more than two truth-values. One might suggest from this controversy that a multivalued system is even inescapable if logic is drawn closer to ordinary language. Besides, certain paradoxes can, perhaps, be better tackled in a multivalued system.

However, the Buddhist's insistence that we can and do make statements with empty subject terms need not be taken as a plea for accepting a third truth-value 'neither true nor false' ('indeterminate') to be attached to such statements. His argument is more like that of Meinong who wants us to accept the fact that there are *unreal* objects which can be spoken about, can be thought of or desired. We may describe an unreal object like the rabbit's horn as having a property or characteristic, such as non-momentariness (or, even the lack of potentiality to produce something). Thus, a term expressing such an unreal object can very well be used as a 'disagreeing example' or as the subject term of the contraposed version of the universal concomitance between existence and momentariness.

The Buddhist, in fact, would like to put all the objects over which our thoughts and other psychological activities may range at the same level; and this will include not only (a) things which do exist now (i.e., which are assumed to be existent by the common people or by the realist) but also (b) things which do not exist now (i.e., past and future things), (c) things which cannot exist (viz., the rabbit's horn), and also (d) things of which it would be a logical contradiction to say that they exist (viz., the son of a barren woman). One point is common to all of these four groups, and this is that we can think about them and our mental activities can be directed toward all of them. In their theory of objects, the Buddhists were not interested in ontology or in the metaphysics of being. If this opens the door to idealism, it may be welcome to the Buddhist (because that would simply prove the Yogācāra point that objects are integral parts of, in fact, indistinguishable from, consciousness). Even without giving in to idealism the Sautrāntika Buddhist may maintain this theory of objects with due modification while emphasizing that the *real* objects are only momentary point-instants which are beyond the range of ordinary experience.

APPENDIX A

By way of documentation, I give below the translation of an excerpt from Udayana, *Ātmatattvaviveka*, pp. 56–69. The Sanskrit text is given in Appendix B. Order of paragraphs here follows that of the Sanskrit text given in B.

By such arguments, the negative method of inferring momentariness of an entity from its existence is also rejected.

Besides, there are some other defects in this negative inference. The minor term (the 'subject' *pakṣa*), the middle term (the 'inferential reason' *hetu*) and the example cited in such an inference cannot be established by any means of knowledge. There cannot be any means of knowledge to establish a non-entity (i.e., a fiction, *avastu*). If it could be established by some means of knowledge it ceases to be a non-entity.

(Opponent:) If so, then your talk about the non-entity becomes self-contradictory.

(Proponent:) Does this self-contradiction points out that there is a means of knowledge to establish the non-entity? Or, (second question) does it reject the prohibitive statement that we should not talk about non-entity? Or, (third question) does it imply that we must concede such statements (about non-entity) which are unauthenticated, i.e., not established by any means of knowledge?

The first alternative is not tenable. Even a thousand of self-contradiction cannot conceivably show that (the non-entity like) the stable object (i.e., the minor term) or the absence of gradual efficiency etc. (i.e., the *hetu*) or the rabbit's horn (i.e., the

example cited to support the general premise) is amenable to (a means of knowledge such as) perception and inference. If it could, what is the use of this silly fight over the nature of non-entities?

The second alternative is acceptable to us because we admit only valid means of knowledge.

(Opponent:) If the prohibitive statement is rejected, no statement with regard to non-entities will be possible.

(Proponent:) What else can we do but remain silent in regard to a matter where statement of any kind would be logically incongruent? Silence is better in such cases. (No statement is better than any statement in such matters.) Please consider yourself who is the better of the two: One who is making statements about entities that cannot be established by any means of knowledge? Or, the other person who remains speechless (on such occasions)?

(Opponent:) But, although you are a wise man, you have not remained silent yourself. You, on the other hand, have made a prohibitive statement with regard to our talk about non-entities!

(Proponent:) True. In order to avoid a self-contradictory object not established by any means of knowledge, you have conceded that one can make statements about the non-existent. Similarly, in order not to allow any statement about the non-entities in our discourse on the means of knowledge, we concede that a self-contradictory statement (prohibiting the use of non-entities) is possible although it is not supported by any means of knowledge. If you treated both the cases in the same manner, we would not have said anything about non-entities. (We have made the above self-contradictory statement because you first raised the question.)

To the third question we say the following: By whose command, may we ask you, one has to accept (in a philosophical discourse statements about) an object which is not established by any means of knowledge?

(Opponent:) Because use of such statements is deeply rooted in our habit (speech-behaviour).

(Proponent:) It will be a self-contradiction to claim that something which cannot be established by any means of knowledge can be deeply rooted in our speech-behaviour. (We speak about objects that appear in our experience and a non-entity cannot appear in our experience and hence cannot be spoken about.)

(Opponent:) Such entities are somehow established (through, for example, some wrong cognition).

(Proponent:) If it is an unreal entity it can never be established through any means of knowledge. If it is established by a means of knowledge, then we ask you to describe that means of knowledge. In *vāda*, i.e., the philosophic debate whose object is to seek truth, we expect you state the means of knowledge.

In the case of *jalpa* 'a philosophic debate whose sole object is to defeat the opponent' or in *vitaṇḍā* 'a philosophic debate whose sole object is to defeat without establishing any position' too, we will not be guilty of self-contradiction because we simply ask you about the means of knowledge by which your *pakṣa* 'minor term' etc. are established. It is impossible as well as undesirable for you to answer by supplying the means of knowledge. If you answer without supplying the means of knowledge, then your own statement will be self-defeating because you have to admit yourself that there is no means of knowledge to establish your *pakṣa* 'minor term' etc. And if you do not answer at all you will meet the defeat-situation' (*nigrahasthāna*) called *a-pratibhā*, 'silence due to lack of intelligence'. [Read '*pakṣādiṣu*' instead of '*praśnādiṣu*'.]

If you could avoid self-contradiction by only conceding statements about non-entities (like the rabbit's horn) we could have allowed such an expedient. But this is not so. There is no lack of self-contradiction when we say that *something* with regard to which no statement can be made, can be the subject of a denial or a prohibitive statement.

(Opponent:) How can there be self-contradiction if we say (rephrasing our position) that a non-entity cannot be the subject of any affirmative statement?

(Proponent:) Oh! (Then we ask the following question:) Do you or do you not speak about something which can never be the subject of any affirmation or denial? In either way you will contradict yourself. In either case, that *something* would be a non-entity because a real entity cannot be such that we cannot make any statement about it.

If you say no to the above question, then it will contradict the very statement "(something) can never be the subject of any affirmation or denial". If you, on the other hand, say yes (that is, if you admit that we can speak about something which can never be the subject of any affirmation or denial), then contradiction will appear as soon as we discuss the nature of that object (that *something*). It does not hold that something cannot be talked about, i.e., affirmed or denied, and, at the same time, it can be talked about (in the manner just stated).

If you insist that a non-entity can be the subject of a denial (i.e., a negative statement), we would ask: why can it not be the subject of an affirmation too? The lack of an accredited means of knowing (such a non-entity) remains the same in both the cases.

(Opponent:) That the son of a barren woman does not speak can be proved (established) by pointing out that he is not a conscious being. But there is no way of proving that the son of a barren woman does speak. (Thus, we prefer the negative statements.)

(Proponent:) No. Even to prove that (the son of a barren woman does speak) you can assign the reason that he is a son (of someone and hence can speak). You cannot say that the son of a barren woman is not a son because if you do you will contradict yourself.

(Opponent:) It is a mere statement (viz., "the son of a barren women"), in fact there is no real son of a barren woman. (Hence no contradiction.)

(Proponent:) No. Even the lack of consciousness (which you adduced as your reason to prove lack of speech in the son of a barren woman) will be treated in the same manner. (One might say: "the lack of consciousness in the son of a barren woman" is a mere phrase there being no real son who lacks consciousness.) "Lack of consciousness" refers (in fact) to another nature which is different from consciousness.

(Opponent:) We simply want to deny (possession of) consciousness here, and this is quite possible.

(Proponent:) No. In our case also we will say then that we simply want to deny (possession of) the property of not being a son.

(Opponent:) Our mere denial of not being a son (human offspring) cannot by itself prove the presence of activity and speech. Thus, how can we adduce a reason (*hetu*) without including another competent, determinable (and positive) object (in our *hetu*)? (Denial cannot reveal an entity which we can use as our 'reason' *hetu*.)

(Proponent:) No. The same principle will apply to lack of consciousness.

(Opponent:) An object only in the form of a negation of the contradictory possibilities can be used as the reason (to prove anything). For example, the nature of being a *śiṃśapā* tree is adduced as the reason (in the inference: it is a tree because it is a *śiṃśapā* tree) because the nature of being a *śiṃśapā* means the negation of its not being

a *śiṃśapā*. The son of a barren woman, on the other hand, not simply excludes (i.e., negates) the possibility of being a pot etc. (the contradictory possibilities) but also excludes the possibility of being a son (a human offspring) like Devadatta (which is not a contradictory possibility). Therefore, the nature of being the son of a barren woman cannot be adduced as the 'reason' *hetu*.

(Proponent:) The lack of consciousness (in the son of a barren woman) can also be treated in the same manner. It is not the case that the son of a barren woman (who lacks consciousness) excludes only such conscious beings as Devadatta and not also the unconscious objects such as a piece of wood.

(Opponent:) Speech is a property which is present only in real entities. Thus, in the face of contradiction, how can the presence of speech be proved in a non-entity?

(Proponent:) Through what means of knowledge can this contradiction be established? Is it because we apprehend non-entities always without speech? Or, because we do not apprehend speech divorced from a real entity?

A non-entity can never be apprehended through any means of knowledge. If it could, it will not be a non-entity. The latter alternative is also not tenable because we will be in the same predicament. Just as speech as divorced from any real entity cannot be established, so also lack of speech divorced from any real entity cannot be proved by any means of knowledge.

(Opponent:) There is only a conceptual construction of the lack of connection between the property speech and the subject.

(Proponent:) What can stop a 'conceptual construction' (*vikalpa*) of the connection between speech and the subject.

(Opponent:) To be a speaker means to produce speech. How can such a productive power be present in a non-entity which is (supposed to be) devoid of all power to do anything?

(Proponent:) How can there be even lack of speech? For, lack of speech means the character of producing what is not speech. (Speechlessness implies doing something else.)

(Opponent:) It is not contradictory to say that if there is lack of every power to do anything then there is also the lack of the power to speak.

(Proponent:) By what means of knowledge can it be established that the son of a barren woman lacks all power to do anything?

(Opponent:) It lacks all power because it is a non-entity.

(Proponent:) How can you establish that it is a non-entity?

(Opponent:) Because it lacks all power to do anything.

(Proponent:) In this way you are only moving here and there uttering mere words and trying to avoid the issue, just as a penniless borrower of money tries to avoid the money-lender. And you are not seeing the vicious circle (the defect of mutual dependence).

(Opponent:) It is a non-entity because it lacks both gradual efficiency and simultaneous efficiency. (If something cannot produce a thing either gradually or simultaneously, it is a non-entity.)

(Proponent:) No. In order to prove such lack of gradual or simultaneous efficiency, you have to adduce a means of knowledge. If the nature of being a son is applied to it, all other properties, such as being able to speak that invariably go along with being a son, can also be applied to it. Thus, how can there be any scope of proving the lack of gradual and simultaneous efficiency in it? How can there be any scope of proving that it is a non-entity? And, how can there be any chance of proving the lack of speech etc.?

Therefore, it is our accredited means of knowledge only which is the *limit* within which our speech behaviour should operate. If this limit is transgressed, there will certainly be chaos.

APPENDIX B

Udayana, *Ātmatattvaviveka*, pp. 56–69.

Etena vyatirekapakṣo'pi nirastaḥ.

Adhikaś ca tatrāśrayahetudṛṣṭāntasiddhau pramāṇābhāvaḥ, avastuni pramāṇāpravṛtteḥ, pramāṇapravṛttāv alīkatvānupapatteḥ.

Evam tarhy avyavahāre svavacanavirodhaḥ syād iti cet.

Tat kiṃ svavacanavirodhena teṣu pramāṇam upadarśitaṃ bhavet, vyavahāraniṣedhavyavahāro'pi vā khaṇḍitaḥ syāt, aprāmāṇiko'yaṃ vyavahāro'vaśyābhyupagantavya iti vā bhavet.

Na tāvat prathamaḥ, na hi virodhasahasreṇāpi sthire tasya kramādivirahe vā śaśaśṛṅge vā pratyakṣam anumānam vā darśayituṃ śakyam, tathātve vā kṛtaṃ bhautakalahena.

Dvitīyas tv iṣyata eva prāmāṇikaiḥ.

Avacanam eva tarhi tatra prāptam.

Kiṃ kurmo yatra vacanaṃ sarvathaivānupapannaṃ tatrāvacanam eva śreyaḥ, tvam api paribhāvaya tāvat niṣprāmāṇike'rthe mūkavāvadūkayoḥ kataraḥ śreyān?

Evaṃ viduṣāpi bhavatā na mūkībhūya sthitam, api tu vyavahāraḥ pratiṣiddha evāsatīti cet.

Satyam, yathā aprāmāṇikaḥ svavacanaviruddho'rtho mā prasāṅkṣīd iti manyamānena tvayā ca aprāmāṇika evāsati vyavahāraḥ svīkṛtas tathāsmābhir api pramāṇacintāyām aprāmāṇiko vyavahāro mā prasāṅkṣīd iti manyamānair aprāmāṇika eva svavacanavirodhaḥ svīkriyate. Yadi tūbhayatrāpi bhavān samānadṛṣṭiḥ syād asmābhir api tadā na kiñcid ucyata iti

Tṛtīye tv aprāmāṇikaś cāpy avaśyābhyupagantavyaś ceti kasyeyam ājñeti bhavān eva praṣṭavyaḥ.

Vyavahārasya sudṛḍhanirūḍhatvād iti cet.

Aprāmāṇikaś ca sudṛḍhanirūḍhaś ceti vyāghātaḥ.

Kathañcid api vyavasthitatvād iti cet.

Aprāmāṇikaś cen na kathañcid api vyavatiṣṭhate, prāmāṇikaś cet tad evocyatām iti vāde vyavasthā.

Jalpavitaṇḍayos tu pakṣādiṣu pramāṇapraśnamātrapravṛttasya na svavacanavirodhaḥ. Tatra pramāṇenottaram aniṣṭam aśakyaṃ ca, apramāṇenaiva tūttare svavacanenaiva bhaṅgaḥ, madukteṣu pakṣādiṣu pramāṇaṃ nāstīti svayam eva svīkārāt, anuttare tv apratibhaiveti.

Yadi ca vyavahārasvīkāre virodhaparihāraḥ syāt asau svīkriyetāpi, na tv evam, na khalu sakalavyavahārābhājanaṃ ca tanniṣedhavyavahārabhājanam ceti vacanaṃ parasparam avirodhi.

Vidhivyavahāramātrābhiprāyeṇābhājanatvavāde kuto virodha iti cet.

Hanta, sakalavidhiniṣedhavyavahārābhājanatvena kiñcid vyavahriyate na vā, ubhayathāpi svavacanavirodhaḥ, ubhayathāpy avastunaiva tena bhavitavyam, vastunaḥ sarvavyavahāravirahānupapatteḥ.

Netipakṣe sakalavidhiniṣedhavyavahāravirahīty anenaiva vyavahāreṇa virodhāt,

avyavahṛtasya niṣeddhum aśakyatvāt. Vyavahriyata iti pakṣe'pi viṣayasvarūpaparyālocanayaiva virodhāt, na hi sarva-vyavahārāviṣayaś ca vyavahriyate ceti.

Yadi cāvastuno niṣedhavyavahāragocaratvam, vidhivyavahāragocaratāpi kiṃ na syāt pramāṇābhāvasyobhayatrāpi tulyatvād iti.

Bandhyāsutasyāvaktṛtve'cetanatvādikam eva pramāṇaṃ vaktṛtve tu na kiñcid iti cet.

Na, tatrāpi sutatvasya vidyamānatvāt, na hi bandhyāyāḥ suto na sutaḥ, tahā sati svavacanavirodhāt.

Vacanamātram evaitat na tu paramārthataḥ suta evāsāv iti cet.

Na, acaitanyasyāpy evaṃrūpatvāt, cetanād anyat svabhāvāntaram eva hy acetanam ity ucyate.

Caitanyanivṛttimātram eveha vivakṣitam, tac ca sambhavaty eveti cet.

Na, tatrāpy asutatvanivṛttimātrasyaiva vivakṣitatvāt.

Asutatvanivṛttimātrasya svarūpeṇa kṛtijñaptyor asāmarthye samartham arthāntaram adhyavaseyam anantarbhāvya kuto hetutvam iti cet.

Na, acaitanye'py asya nyāyasya samānatvāt.

Vyāvṛttirūpam api tad eva gamakaṃ yad atasmād eva (vyāvartate), yathā śiṃśapātvam, bandhyāsutas tv asutād iva ghaṭādeḥ sutād api Devadattāder vyāvartate, ato na hetur iti cet.

Nanv acaitanyam evamrūpam eva, na hi bandhyāsutaś cetanād iva Devadattāder acetanād api kāṣṭhāder na vyāvartate.

Vaktṛtvaṃ vastvekaniyato dharmaḥ sa katham avastuni sādhyo virodhād iti cet.

Sa punar ayaṃ virodhaḥ kutaḥ pramāṇāt siddhaḥ – kiṃ vaktṛtvaviviktasyāvastuno niyamenopalambhāt āhosvid vastuviviktasya vaktṛtvasyānupalambhād iti.

Na tāvad avastu kenāpi pramāṇenopalambhagocaraḥ, tathātve vā nāvastu. nāpy uttaraḥ, samānatvāt, na hi vaktṛtvam iva avaktṛtvam api vastuviviktaṃ kasyacit pramāṇasya viṣayaḥ.

Tadviviktavikalpamātraṃ tāvad astīti cet.

Tatsaṃsṛṣṭavikalpane'pi ko vārayitā?

Nanu vaktṛtvaṃ vacanaṃ prati kartṛtvam, tat katham avastuni, tasya sarvasāmarthyavirahalakṣaṇatvād iti cet.

Avaktṛtvam api kathan tatra tasya vacanetarakartṛtvalakṣaṇatvād iti.

Sarvasāmarthyavirahe vacanasāmarthyaviraho na viruddha iti cet.

Atha sarvasāmarthyaviraho bandhyāsutasya kutaḥ pramāṇāt siddhaḥ?

Avastutvād eveti cet.

Nanv etad api kutaḥ siddham?

Sarvasāmarthyavirahād iti cet.

So'yam itastataḥ kevalair vacanair nirdhanādhamarṇika iva sādhūn bhrāmayan parasparāśrayadoṣam api na paśyati.

Kramayaugapadyavirahād iti cet.

Na tadvirahasiddhāv api pramāṇānuyogasyānuvṛtteḥ, sutatve ca parāmṛṣyamāṇe tadavinābhūtasakalavaktṛtvādidharmaprasaktau kutaḥ kramayaugapadyavirahasādhanasyāvakāśaḥ, kutastarāṃ cāvastutvasādhanasya, kutastamāṃ cākartṛtvādisādhanānām. Tasmāt pramāṇam eva sīmā vyavahārasādhanasya, tadatikrame tv aniyama eveti.

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NOTES

* This is a revised and enlarged version of my paper at the Boston Symposium on 'Non-referring expressions in Nyāya and Buddhism', at the annual meeting of the Association for Asian Studies, March, 1969. The papers were read in the following order: Karl Potter, Charlene McDermott, Bimal Matilal and Dalsukh Malvania. Unfortunately Prof. Malvania's paper is not ready yet for publication. We hope to publish it in a future issue of this journal. – Ed.

[1] Kumārila, see section on *Codanāsūtra*, verse 6 under sūtra 2.

[2] B. Russell (1905).

[3] B. Russell (1919), p. 169.
[4] A. Meinong, pp. 76–117.
[5] W. V. Quine (1961), Essay 1.
[6] Udayana *Ātmatattvaviveka*, pp. 59–89.
[7] See also my review of C. Goekoop. For a similar point, see Strawson (1952), pp. 234–36.
[8] Udayana *Ātmatattvaviveka*, pp. 64–65.
[9] Vācaspati, pp. 172–73.
[10] R. Carnap, pp. 20–21.
[11] Udayana *Ātmatattvaviveka*, p. 69.
[12] Vācaspati, pp. 85–86. For the Nyāya theory and the Prābhākara theory of error, see my Review of Mohanty's *Gaṅgeśa's Theory of Truth*, pp. 327–28.
[13] Udayana *Ātmatattvaviveka*, p. 71.
[14] R. Carnap, p. 31.
[15] I am using the indefinite article 'a' instead of the definite 'the' and maintaining the view that such statements will have existential commitment without the uniqueness condition of the definite article. I have chosen this procedure in order to avoid unnessary complications.
[16] B. Russell (1919), p. 179.
[17] W. V. Quine (1960), pp. 176–79.
[18] Analysis, June 1960, pp. 125–35.
[19] P. F. Strawson (1950).

Note added in proof: Section VII of this article largely stems from a discussion I had with one of our consulting editors, Professor Hanz Herzberger, to whom I wish to express my indebtedness.

*The Context Principle and Some Indian Controversies over Meaning**

B. K. MATILAL and P. K. SEN

I

Recent discussions show that there are several ways to flesh out and interpret Frege's remarks on the 'context principle'. Besides, we believe that the issue is only the tip of an iceberg. Whichever way one wishes to resolve the problem and interpret the principle, it has some important consequences for our epistemology and ontology. It has even been suggested that the controversy between the 'context' and the 'composition' principle may be broadened to set the background for learning philosophical lessons about the controversy between holism and atomism, even between realism and relativism. But there was also an 'Indian version' of the problem discussed and debated extensively by the exponents of the two sub-schools of classical Indian *Mīmāṃsā*.

In his *Two Dogmas of Empiricism*, W. V. Quine insisted upon the primacy of the sentence over word or term as the vehicle of meaning and attributed this doctrine to Frege's context principle in *Grundlagen* 60. It is significant to note that Quine in his *Word and Object* referred to the view of 'Indian Grammarians' in support of his view. In fact, it was the view of Bhartṛhari, a sixth-century AD grammarian of India, about whom J. Brough wrote an article in the *Transactions of Philological Society*, Oxford, 1951. Quine cited the article by Brough in his footnote. Quine's holistic interpretation of the Fregean doctrine was based upon a mistake (as Michael Dummett and others have argued), but Quine remained faithful to his interpretation and described it as an 'important re-orientation in semantics' over the old term by term empiricism of Locke and Hume. Even in his latest book, *Theories and Things*, Quine labels this semantic primacy of sentence as one of the 'Five milestones of Empiricism', which gave us contextual definitions. Quine said that this is like the Copernican revolution in Astronomy, in being a shift of centre (p. 69). It made obvious that the words or terms are only like 'grammatical particles' for the meanings of words are abstractions from the truth-conditions of the sentence that contains them.

* We benefited from conversation with Michael Dummett at a seminar given by us in Oxford in 1984. We wish to thank also the following persons who read the paper at its various stages and made important comments: Peter Strawson, Michael Resnik, and Simon Blackburn.

Whatever might be the correct interpretation of Frege's 'context principle', it is widely believed that he rejected it in his later writing implicitly. H. Sluga[1] has argued that Frege retained the principle in later writings, while M. Resnik[2] has said that he rejected it. Dummett has claimed that Frege retained a weaker version of it implicitly in his later writings. The modern exegetical literature on Frege is vast and varied. Recently Peter Milne[3] has pointed out further difficulties that one would face if one takes Frege to have understood the context principle as a thesis about reference along the lines advocated by Dummett and C. Wright.

In this paper we propose first to review very briefly the exegetical literature on the interpretation of the context principle, and then we will introduce the Indian formulations of what appears at least to be a similar problem. Having first explicitly acknowledged that the types of questions which led to the controversy between the 'context' and the 'composition' principles in the exegesis on Frege were not exactly the same as led to the classical Indian philosophical debate over the *anvitābhidhāna* 'connected designation', and the *abhihitānvaya* 'designation before connection' theory,[4] we aim to show also that the two controversies were not totally irrelevant to each other from the point of view of the philosophy of language. The purpose here is to bring out the points of contact and parallels between the discussion of Frege's context principle on the one hand and the long-lasting Indian debate on the other. It is believed that such endeavour may throw further light on the thorny issue and hence will be philosophically fruitful.

As a very modest beginning, we may formulate three very simple questions, to show the divergence of the ways the two controversies, one in the modern West and the other in classical India, developed.

(i) Does a word have a meaning only in the context of a sentence?
(ii) Is it possible to *know* what a word means only by considering sentential contexts in which it occurs?
(iii) Given that we know the meanings of words constituting a sentence, how do we come to *know*, understand, the meaning of the sentence as a connected whole (of meaning)?

It seems that the modern Fregean controversy is connected with (i) and perhaps also indirectly with (ii), while the classical Indian controversy is directly concerned with (iii). We would like to suggest further that the Indian philosophers were also indirectly concerned with (i), and perhaps

[1] *Gottlob Frege*, 1980.
[2] *Frege and the Philosophy of Mathematics*, Ithaca, 1980.
[3] 'Frege's Context Principle', *Mind*, 1986, pp. 491–5.
[4] We apologize for introducing two rather formidable Sanskrit terms at the outset. We have given literal translations of the two terms here. They are ascribed to the two philosophers of the Mimamsa school, Prābhākara and (Kumārila) Bhāṭṭa. Later we propose to use these two proper names to refer to these two rival views.

also with (ii). That it was so is suggested by our study of Bhartṛhari who criticized and rejected both sides of the (Indian) controversy between the 'connected designation' and the 'designation-before-connection' theories. Bhartṛhari put forward a third alternative, which we may call 'sentence-holism'. He suggested a strong affirmative answer to question (i) and accepted its extreme consequence, namely, words have no meaning ouside, or isolated from, the context of a sentence just as 'rat' in the word 'Socrates' has no meaning. This would show at least that Quine's (mis-) interpretation of the Fregean doctrine has a philosophical basis and on similar considerations Bhartṛhari was led to his sentence holism. These three questions are however not unrelated. In order to answer question (iii) satisfactorily we need to know whether the words have meanings in isolation, independently of the context of the sentence in which they occur.

II

If we give a strong affirmative answer to question (i) above, we get a *strong* interpretation of the doctrine. Here the principle is to be understood in close connection with the idea of a *contextual definition*. An affirmative answer to question (ii) leads to the *weak* interpretation. It is understood as simply a methodological policy: we should ask what a particular sub-sentential expression means only in the context of a sentence. It seems that some of Frege's remarks favoured the *strong*, some the *weak* interpretation. There is however an *intermediate* interpretation. These three interpretations differ in the following manner. In the strong interpretation, words and other sub-sentential expressions *have no meaning of their own*. In the weak interpretation, these sub-sentential expressions are not denied meanings of their own. In the intermediate interpretation, the meaning which the sub-sentential expressions have is only the contribution which they make to the meaning of the sentence in which they occur. The strength of this third interpretation lies in the fact that unlike the other two interpretations this one presents the principle itself in a favourable light. Textual evidence here is indirect (see Appendix for different formulations of the principle by Frege).

What is distinctive in the strong interpretation of the principle is that it invites us to understand the principle as saying that every expression which is short of a sentence must be defined contextually. But it is also this connection with the contextual definition which makes the principle, on this interpretation, unacceptable.

Let us first be clear about the exact significance of a contextual definition. Take a classic example of the use of the contextual definition: Russell's theory of (definite) descriptions.[5] Russell's definition of (definite) descrip-

[5] 'On Denoting', *Mind*, 1905, pp. 479–93.

tions, given in his famous theory, is not actually designed to *say* what such an expression means; it is rather designed to *show* that we need not suppose that a descriptive phrase has any meaning of its own; it is designed to show that it is not a self-subsistent semantical unit at all, for the analysis the theory offers shows how such a phrase can be *eliminated* altogether from a sentence. If it is said that *every* definition, not only the contextual is a device for eliminating the phrase which is defined, we will show the basic difference between two sorts of eliminating devices—one, in the case of non-contextual, that is explicit, definition, and the other, in the case of the contextual. The contextual definition, unlike the explicit definition, does not actually say what an expression means. A definition can be regarded as saying what an expression means, rather than being a mere device for eliminating the expression in question if and only if it can be construed as an answer to the question 'What does a mean?' where a is any expression. It can be stated in the form

a means b.

But this is the form of an explicit definition. What then does the contextual definition do? If we want to maintain, what we have just said against the supposition notwithstanding, that it also gives the meaning of the expression, how does it do so? It seems that it can give the meaning, if at all, only in the following way:

a means that by virtue of which $S(a)$ means that p,

where $S(a)$ is a sentence containing the expression a and 'p' is replaced by some sentence giving the meaning of the sentence $S(a)$ but not containing the expression a. But this does not really tell us *what* that meaning is by virtue of which this semantical equivalence between the two sentences holds. We can indeed put the point in the form of a paradox. The contextual definition tells about the meaning x of the expression a that it is

the x such that it makes $S(a)$ mean the same as $\ulcorner p \urcorner$.

But according to Russell's own principle—a principle regarding what he calls knowledge by description—we can know this without knowing what this x is.

What has been said above shows, we think, that, treated as an account of the meaning of individual expressions, the contextual definition is very poor. So we should not perhaps treat the contextual definition as attempting that. What then does a contextual definition do? A very plausible answer is that it shows that we should not ask the question: what does the expression mean? (Just as we should not ask the questions: what does 'sake' mean in 'for the sake of'? We should ask: what does 'for the sake

of' mean? or, perhaps, what does 'Philip gave his life for the sake of his country' mean?)

Our opposition to the idea that the contextual definition can be treated as a way of giving the meaning of a word and other sub-sentential expressions can be misunderstood. So let us be quite clear about the nature of this opposition. Our main objection to this idea is that the contextual definition does not tell us *what* the expression means. It tells us *at most* that the expression means *something* by virtue of which a certain equivalence, namely the equivalence between the definiendum and the definiens, obtains, without telling us what that something is. Note that this is *not* an objection to the device called 'contextual definition' as such, but to the view that by this device we *give the meaning of the expression defined*. This objection need not be withdrawn in the face of standard contextual definition of a sentential connective, for example '&', wherein truth-conditions of sentences, formed by the help of such a connective, are specified. Here too, the only thing that the definition does by way of giving the *meaning* of the sentential connective is that it tells us that the connective means something by virtue of which sentences formed by their help have the truth-conditions they have. In fact, in the case of a sentential connective, more than in any other case, it is clear that the contextual definition *need* not be taken to give the meaning of a connective; it can be taken to do *just* what it does, namely, *give the truth-conditions* of sentences formed by using the connective. For the purposes of *logic*, after all, nothing else is necessary. (What does it matter if we do not know what the connective *means*, once we know the relevant truth-conditions? For if we know what the truth-conditions of sentences formed by using the sentential connectives are, we can define *validity* of formulas containing them, the relation of *logical consequence* among such formulas, and all other similar concepts which have any importance for logic.)

One may ask, at this point, 'What is meaning but truth-conditions?' But we can answer this question without entering into the larger issue of whether we can indeed *identify* meaning with truth-conditions. The answer is that even if meaning is nothing but the truth-conditions, it is only the meaning of the *sentence* which is constituted by truth-conditions, and *not* the meaning of the sentential connective which the sentence contains. Truth-conditions can constitute the meaning at most of what they are truth-conditions of; and that is the sentence and not the sentential connective.

Now, one may still say that the context principle should be understood in any case in terms of the contextual definition, which can then be understood in the manner just suggested. But even this would not really be plausible at all. For, to make use of the idea of contextual definition in our account of the context principle, we shall have to make a complete generalization first. That is, we shall have to say that *all* expressions which

fall short of complete sentences must be defined contextually, for the context principle is a principle which is valid for all such expressions. But to make this generalization is to obliterate a distinction on which the very plausibility of the idea of a contextual definition rests. It has never been a part of the thesis that all terms can be defined only contextually, but only that some terms have to be so defined. In fact, the idea of contextual definition thrives on the distinction which Russell had in his mind, namely the distinction between complete and incomplete expressions. It is not the case that *all* expressions are incomplete without exception; only some expressions are so. It is only in the case of incomplete expressions that the contextual definition would be appropriate; it would not be appropriate in the case of complete expressions. There is indeed some intrinsic difficulty in the idea that the contextual definition be applied to *all* terms, for the very idea behind the kind of definition Russell has offered is that the descriptive phrase, for which the definition is paradigmatically apt, can be eliminated altogether from our language, and in favour of the expressions which are *not* incomplete: we need not have these incomplete expressions in our language, we can make do with the complete expressions alone.

There is yet another reason why we should not try to understand the context principle in terms of the contextual definition. If we take the strong interpretation of the principle which this would force upon us, the context principle would be utterly incompatible with the composition principle. If the individual expressions—words and other sub-sentential expressions—do not have any meaning of their own, there cannot be any question of deciphering the meaning of a whole sentence by (a kind of) step-by-step construction from the meanings of words. But Frege is not prepared to give up the composition principle, as Dummett so rightly emphasizes (see below).

One may say that our objections to the interpretation of the context principle in terms of the idea of contextual definition are based on a questionable assumption. It is the assumption that contextual definition was understood by Frege in the way in which it was by Russell. But, it may be said, this assumption itself is wrong; and that it is wrong is shown by the fact that, while for Russell the contextual definition is a device for *elimination* (and, therefore, for a kind of reduction), for Frege it is not so. In fact, the possibility of giving a contextual definition for a singular term occurring in a sentential context shows, for Frege, that the singular term *does have* reference after all.[6] By contrast, Russell gave his definition of

[6] This aspect of Frege's use of the contextual definition is brought out extremely well by Crispin Wright in his *Frege's Conception of Numbers as Objects*, Aberdeen University Press, 1983. But Peter Milne (*Mind*, 1986, pp. 491–6) is right in saying that the context principle cannot be exhausted by Crispin Wright's *syntactic priority thesis*, that is, by the thesis that if an expression has *all* the syntactic features of a singular term, and we can give sense to the sentence as a whole, then we can say that the singular term stands for an object, even if there is no *independent* evidence for the existence of

definite descriptions—for example, of 'the present king of France'—just to show that the definite description does *not* have any reference.

It is true that Frege's contextual definition is different from Russell's in this respect, and that we have not so far laid any emphasis on this fact. (This is on the assumption that we are not making any mistake by ascribing to Frege the use of the idea of contextual definition.) But our critique of the interpretation of the context principle in terms of contextual definition cannot be faulted on that ground. The critique remains valid even if the difference just noted between the two conceptions of contextual definition exists and is otherwise important. On the Fregean conception, the contextual definition would indeed tell us that an expression, typically a singular term, has reference, and, for that matter, sense as well. But telling that an expression has reference (or sense) is certainly different from telling *what* that reference (or sense) is. If it is said that the reference, and consequently the sense, are given by the expression itself (as Dummett has suggested)—the singular term 'the morning star' gives both the planet and a mode of presentation of the planet, say—then what does the definition do? The definition itself sets up equivalence between sentences; but it does so without specifying the ground of this equivalence: the meaning, that is, the sense or the reference.

The weak interpretation of the context principle has the merit of being quite uncontroversial. Who will deny that the best way, and, in the case of some expressions, the only way, in which we can ascertain the meaning of sub-sentential expressions is by observing how they are used in sentences to say something? Consider how the archaeologists have done their job of deciphering inscriptions in long lost and dead languages. Their only *method* has been that of observing patiently, sometimes over the years, how the same character occurs in different constructions.

But since the context principle, on this interpretation, becomes so unexceptionable, we may doubt whether this is all that Frege had in his mind. One of the things which Frege certainly meant us to take seriously—this becomes evident when we consider his actual use of the principle in the development of his theory of number—is that it does not matter whether we are able to identify in each case something to be the meaning of a given sub-sentential expression and form a self-subsistent idea to represent this meaning; it is sufficient if we can say what the sentence in

such an object. (For one thing, expressions other than singular terms must be brought within the scope of the context principle; and, for another, the principle should not be assumed to concern *reference* alone of expressions, it can concern their *sense* as well.) However, the point which Milne himself makes, namely that the context principle was taken by Frege (in his pre-sense/reference thinking which was at least partially retained even at the time of writing *The Foundations*), to give an account of identity statements in terms of a shift of reference from the object to the sign, cannot add anything to a specification of the *content* of the context principle. It only tells us something about what this principle was taken to explain. Besides, it is both desirable, and possible, to find out some interpretation of the context principle which can survive the sense/reference distinction.

which it occurs means as a whole, and tell how the expression in question is used in it. So what Frege had in his mind when he advocated the context principle is not just a matter of discovering the meaning of an individual expression, it is also something about the individual expression's *having* the meaning it has. The weak interpretation therefore, is too weak to bring out the full significance of the Fregean principle. Thus, it seems that we shall have to reject both the strong interpretation given in terms of the idea of contextual definition and the weak interpretation which treats the principle just as a methodological advice. We are then left with what we have called the intermediate interpretation. To a consideration of this we may turn now.

III

What the intermediate interpretation tells us is that the meaning of a sub-sentential expression is nothing but its contribution to the meaning of the sentence in which it occurs. Dummett, who apparently takes the context principle in this form, also gives what seems to us to be the best possible defence of the principle if it is so taken. The defence goes as follows: the main, if not the sole, function of language is that we use it for *saying* things, to perform linguistic (speech) acts. But we cannot say anything, in the strict sense of the word 'say', without the use of whole sentences. It is only by use of whole sentences that we can make 'moves' in language, to put it in Dummett's words. It follows from this that the significance of sub-sentential expressions also lies in that they enable us to say whatever we want to say. But how do these expressions help us in the matter of saying whatever we want to say? Surely by forming parts of sentences and contributing to the significance of sentences of which they form parts. Thus the meaning of the sub-sentential expressions, we can now say, consists in the contribution which they make to the meaning of the sentences.

The exact significance of the context principle is not really so easy to bring out even in this intermediate or moderate form. In being clear about the meanings of the individual expressions, in terms of contributions made to the meanings of sentences, we shall have to keep in mind the distinction between sense and reference drawn by Frege, although this is a distinction which is absent from Frege's early writings, including *The Foundations of Arithmetic* where the context principle is broached.

The context principle says that the meaning of a sub-sentential expression is nothing but what it contributes to the meaning of the sentence. But what is the meaning of a sentence? Granting that the meaning of the sentence is what Frege calls its 'sense', we shall have to say that the meaning of the sentence is its truth-conditions (at least that is the usual understanding of the idea of sense in Frege). What then is

the contribution of a sub-sentential expression to the meaning of the sentences in which they occur? It would surely be the contribution which it makes to the determination of the truth-value of these sentences. If we now ask the further question regarding what, or how, the individual expression contributes to the truth-conditions of the sentences, say, of the atomic sentence 'Socrates is wise', we find that the name 'Socrates' contributes to its truth-conditions by introducing the individual Socrates, and the predicate, 'wise' or 'is wise', or '(. . . .) is wise', or whatever it is—does it by introducing the concept *wise*. But we have to realize that the individual and the concept are both *referents* of the respective expressions, or what are called by Dummett their *semantic values*. But this realization would actually make us less confident about the correctness of this approach to the idea of the meaning of a sub-sentential expression being what it contributes to the truth-conditions; at the same time, it would also cast doubt on the idea that the meaning (or sense) of the sentence is nothing but its truth-conditions. The general principle which seems simultaneously to undermine both is that it is the reference of the complex expression which is determined by the reference of the constituents. We can, of course, think of ways out of this difficulty, but that will have to be worked out only in the light of a more detailed consideration of the sense/reference distinction.

IV

Some scholars writing on the context principle have suggested that in putting forward the context principle Frege was actually trying to find his own solution to what is basically a Kantian problem, namely, the problem of explaining *the unity of thought*. The unity of thought, for Kant, is a judgement. A judgement involves synthesis, and it is this synthesis which brings about the unity of the judgement, the fact that a judgement is *one* in spite of its essential complexity (which complexity is in the long run due to the complexity of the *manifold of sense*). The synthesis, bringing about the unity in a judgement, is guided by a rule (and it is this which makes the synthesis intelligent, as opposed to blind, and confers whatever *objectivity* a judgement has despite the fact that the synthesis, and to that extent the judgement itself, is a subjective act operating on a subjective manifold). This rule, for Kant, is always some *concept*. In fact two kinds of concepts are involved in every judgement, the concepts functioning as the predicate(s) *and* the concepts functioning as the categories of understanding. (Thus 'Socrates is wise' involves the concept *wise* as well as the concept (category) of substance-and-accidens.) So it is true to say that the unity of the judgement, and so of the thought, is explained by Kant in terms of the concepts. We may now identify the concepts to which this function is ascribed by Kant with the concepts, or, more

generally, functions, Frege is talking about. If we do so, we can say that it is the same role which is ascribed to the concepts by both Kant and Frege; for certainly it is the concept (or function) which gives unity to the thoughts according to Frege: being the unsaturated component in our thought it is the concept (function) which makes its unity possible.

It is a very good question to ask here whether this identification of the Kantian concept with the Fregean is at all correct. There are some obvious differences, for sure, between the two. Concepts, and functions generally, form an important item in Frege's ontology, but they are not accorded any ontological status by Kant. Concepts confer unity to our thoughts, judgements in Kant's view, because they are the rules of *synthesis*, which is a mental act; but there is no question of any synthesis being involved in bringing about the unity for Frege. In fact, the unity of thought is not a thing which is *brought about* by an act of the mind, in Frege's theory, it is something which is out there, albeit in the third realm, independently of us and of our activities. Thoughts are objective entities, their unity is also something objective.

One may, however, say that these differences do not really matter for the limited perspective from which the analogy is drawn. From that perspective, the only thing which is important is that concepts, for both philosophers, are what explain the unity of thought, whatever may be the details of the explanation offered by any of them. Let us grant this. But even so, we are not entitled to conclude that the *context principle* is put forward by Frege to explain the unity of thought. The unity of thought is explained by Frege by invoking the idea of an unsaturated part of the thought, which unites *itself* with the other part, without requiring a *tertium quid*. To say now that it is here that the context principle is brought into play is to make exactly the mistake of supposing that the context principle is to be understood in terms of the saturated/unsaturated distinction.[7]

V

A few words are in order here concerning the relationship of the context principle and what is now called 'the composition principle'. The composition principle says that the meaning (sense) of a whole sentence is determined by (*composed* of) the meaning (sense) of the words out of which the sentence is composed. Apparently, at least, this principle is inconsistent with the context principle. For while the context principle

[7] We believe that it is a mistake to suppose that the principle applies to unsaturated expressions alone. For, to be sure, the context principle, according to Frege, should apply to *all* expressions. Resnik has added another reason (private correspondence): unsaturatedness is only needed after sentences are given parts that have separable meanings, while the *strong* context principle would imply that parts of the sentence may not have separate meanings.

seems to take the meaning (sense) of the *sentence* to be primary, the composition principle seems to take the meaning (sense) of the *word* to be primary.

In his first book on Frege, *Frege: Philosophy of Language*, Michael Dummett discusses the question whether it is possible to reconcile the context principle with the composition principle, to both of which Frege seems to have been committed. His answer to the question is that they *can* be reconciled, and he suggests that they can be reconciled in the following way: 'In the order of *explanation* the sense of a sentence is primary, but in the order of *recognition* the sense of a word is primary.'[8] In so far as the knowledge of what a particular significant stretch of discourse means is concerned, knowledge of the sense of individual words must precede any knowledge of the sentence as a whole; the reason for this being that the sense of the sentence is itself determined, and determined in the very strong sense of being actually made up of, the senses of the words which constitute the sentence. (This is the Composition Principle.) Since the meaning of the sentence is what is determined by the meaning of the words, we cannot know what the meaning of the whole sentence is unless we know what the words which make up the sentence mean.

> We thus derive our knowledge of the sense of any given sentence from our previous knowledge of the senses of the words that compose it, together with our observation of the way in which they are combined in that sentence. (p. 4)

But, on the other hand, it is the sense of the sentence which must be regarded as primary in the order of *explanation* of the sense of any significant stretch of discourse; this explanation of the sense of the words, as well as sentences, being understood as a *general* explanation of what it is for sentences and words to have a sense, 'that is, of what it is for us to grasp their sense'. Dummett continues,

> For Frege the sense of a word or of any expression not a sentence can be understood only as consisting in the contribution which it makes to determining the sense of any sentence in which it may occur. Since it is only by means of a sentence that we may perform a linguistic act—that we can *say* anything—the possession of sense by a word or complex expression short of a sentence cannot consist in anything else but its being governed by a general rule which partially specifies the sense of sentences containing it.

Dummett is aware that this way of understanding the relationship of the sense of sentences and the sense of words can be defended only if we could give an account of what it is for a sentence to have sense without any reference to the sentence being formed out of meaningful words.

[8] M. Dummett, *Frege: Philosophy of Language*, 2nd edn, p. 4.

(That is, we should not say that for the sentence to have sense is to be composed of words which have sense.) So Dummett adds further:

If this is so, then, on pain of circularity, the general notion of the sense possessed by a sentence must be capable of being explained without reference to the notion of the senses of constituent words or expressions. This is possible via the conception of truth-conditions: to grasp the sense of a sentence is, in general, to know the conditions under which that sentence is true and the conditions under which it is false. (pp. 4–5).

VI

We now propose to examine the issues before the Indian philosophers, issues which provided a context in which it has been thought that some sort of a 'context' principle was enunciated against an atomistic theory where the sentence-meaning as a whole is supposed to be constituted by the atoms of word-meaning. One issue was about the significant units of language, that is, the proper locus of meaning. (Frege might or might not have been concerned with this issue in *Grundlagen*.) The task before us now is to provide an exegesis on certain arguments of the Indian philosophers to illuminate the central point in the controversy. But at the very outset, one word of caution to avoid possible misunderstanding. In what follows we will not make the usual distinction between sense and reference. Although a somewhat similar distinction between the 'mode of presentation' and the 'reference' was known to the Naiyāyikas, for the present purpose we would use the ambiguous word 'meaning', and accept some version of the reference theory of meaning.

In *Vākyapadīya*, ch. 2, Bhartṛhari notes that regarding the notion of the sentence and sentence-meaning there are two principal philosophical theses: one is called the 'indivisibility' thesis (*a-khaṇḍa-pakṣa*) and the other is the 'divisibility' thesis (*khaṇḍa-pakṣa*). The first thesis is what Bhartṛhari himself maintains while the second is held by his opponents, the Mīmāṃsakas. For our purpose we propose to call the first 'sentence-holism' and the second 'atomism'. They had two main questions before them: what is a sentence, and what constitutes the sentence-meaning? More specifically, how is a sentence constituted, and how is the meaning of a whole sentence cognized by the hearer after the utterance is made? According to sentence-holism, sentences are wholes and they are the unanalysable units of meaningful discourse. Similarly, the meanings of sentences themselves are wholes. In fact they are also timeless. For destruction is usually believed to be dissolution into parts. We reach words as parts of the sentence, and word-meanings as parts of the sentence-meaning through 'analysis, synthesis and abstraction' (a method that is called *apoddhāra*). This method is only instrumental in facilitating our language-learning, a convenient way of making explicit our implicit

linguistic competence. The words are no less abstractions than the letters are. The meaning of a word in isolation is an imaginary construct. In fact words are as much devoid of meaning as the letters or some syllables in a word, like 'rat' in 'Socrates'. The meaning of a complete sentence is given to us as a whole block of reality. We chip this whole and correlate such abstracted (extracted) bits and pieces of meaning with words and particles which are also reached by such a process of breaking apart the whole sentence. On this theory, a sentence cannot be a composite entity with words as constituent elements, and the meaning of a sentence likewise cannot be given by the allocation or computation of word-meanings individually considered. This view is very similar to that of W. V. Quine's, as noted already, and hence Quine's reference to it was justified. The whole meaning though expressed by a sentence can share a common structure, and have common 'parts' but such parts would not be capable of existing in isolation from the rest. In this sense, they could be just our own 'abstractions'. A weaker implication may be that in ontological terms, the wholes (whether sentences or other wholes) may have parts but such parts lose their significance (perhaps *ontic* significance) as soon as they lose their contextuality in the whole. The opponent would have to say that there may be wholes which have parts but the latter will not lose any ontic significance if they lose contextuality. This holistic solution of Bhartṛhari was seriously challenged by the Mīmāṃsakas in the tradition.

VII

We shall leave aside Bhartṛhari and discuss the so-called atomistic views of the two Mīmāṃsā sub-schools.[9] Both atomistic views recognized that the sentence is a composite entity composed of elements which we call words, particles, etc. These elements are meaningful units of expression. The sentence-meaning must be connected with these units. The hearer grasps the meaning of a sentence or what is spoken, provided he has what we may call linguistic competence, that is, knowledge of the meanings of words and particles as well as of how that particular language works. On this view, it will be unreasonable to take sentences as the smallest meaningful units, for sentences are virtually countless and we certainly cannot learn a language by learning those countless sentences and their meanings. It is only by learning a few (a finite number of) words and seeing how that language works that we gain the linguistic competence described above.

What has been stated in the last paragraph is commonly held by the two sub-schools of Mīmāṃsā, the Bhāṭṭa and the Prābhākara. They both reject Bhartṛhari's view. But internal differences between these two

[9] Arguments for both schools are to be found in many Sanskrit philosophical texts. For convenience, we have used Jayanta's *Nyāyamañjarī* of 10–11th century AD. See the edition of 1934, pp. 365–9.

sub-schools led to great controversies for several centuries. This becomes clear as soon as we ask the following question: how does the competent hearer recognize sentence-meaning as a whole from hearing, in bits and pieces, the constituent words in sequence? Does he first cognize or recognize the meaning of each constituent word and then joins these bits and pieces of meaning together to cognize a connected whole—the sentence-meaning? If our answer is yes, then we are talking from the Bhāṭṭa point of view. Designation by words first, then the designata are connected to form a unity (*abhihitānvaya*). Alternatively, the Prābhākara says that a person recognizes the meaning of the whole sentence by hearing simply the constituent words put together syntactically: 'connected designation (by any word)' (*anvitābhidhāna*).

On the first (Bhāṭṭa) view, the hearer recognizes the meaning of the whole sentence by figuring out first the meanings of individual words whereas on the second (Prābhākara) view, he recognizes the meaning of the sentences *directly* from the words themselves skipping the intermediate step of grasping singly the individual word-meanings. Phrased in this way the distinction may seem trivial, but it is not really so. A little reflection shows that on the first view meanings of words are assumed to be independent units, as *complete* objects. In recognizing the meaning of a sentence (i.e., interpreting a sentence made of several words), we as hearers must first obtain these self-subsistent building blocks (meanings) and then cement these blocks to obtain the connected meaning of the sentence. This implies that the distinction between word-meanings and sentence-meaning is one of building blocks and the building itself. Here we move close to the intuition which prompted the modern 'composition' principle. Notice that the words cannot have meanings *only* in the context of a sentence on this view, and hence it does not seem compatible with what we have called the *strong* interpretation of the context principle.

Further the word 'directly' in the second view, that we recognize or obtain the sentence-meaning *directly* from the words themselves, means that there is no intervening event such as that of our getting hold first of the so-called word-meanings as building blocks, between our knowledge of the words (through hearing) and our knowledge of the meaning of the sentences made of such words. This has the implication that the meanings of the words are not, in some sense, context-free, independent objects. Whatever a word designates, it is always related or connected (*anvita*) with the designation of other words in the sentence. Notice that it comes very close to saying that a word gains its proper meaning *only* in a context, that is, in the context of a sentence. In fact, the second view expressly advocates that we know or learn the meaning of a word only by considering the sentential context in which it occurs. Apart from this, we must note that the main point in the dispute is epistemological. The question is how

do we come to know, as we invariably do, the complete and connected meaning of the sentence simply on the basis of our knowledge of the constituent elements, the words? It is clear that we derive our knowledge of such distinct (constituent) elements through hearing (or seeing) the words as well as their interconnections. (It should be noted that knowledge of *meaning* of the sentence is what is aimed at, not mere understanding of its meaning, but it would be beyond the scope of this paper to argue this point.)

VIII

Both sides in the dispute appeal to a general theory about language acquisition. We learn a language invariably by acquiring knowledge of word-meanings given in the context of sentences whose meanings are also known or given. A child learns his language in this way by observing the linguistic and other behaviours of the adults. The older adult (*uttamavṛddha*) commands something to the younger adult (*madhyamavṛddha*) who acts to obey. 'Bring a horse', and a horse is brought. 'Bring a dog and tie the horse', and so it is done. That is how our acquisition of the meanings of individual words is explained. The Bhāṭṭa says here that there is thus the denotative power in the individual words, to give us isolated objects, actions, qualities, and relations (i.e. meanings). Hence given any newly formed sentence we can derive its meaning following the 'expected' syntactic pattern (*ākāṃkṣā*) by computing and manipulating such individual meanings to construct a whole. But the Prābhākara disagrees. He says that since individual word meanings are derived only in the context of some sentence or other and therefore from words already syntactically connected with other words, we learn such word-meanings along with their possible (semantic) connections with other word-meanings. The denotative power of a word gives us not simply the object, or action, or quality or relation but also each item's possible connection with other items. Hence being presented with a sentence we do not waste time by first computing meanings from words and syntax and then manipulating such meanings into a whole, but straight away: we derive the connective meaning whole, objects with action, quality with the qualified, and a relation with a relatum. We shall first discuss one of the arguments usually given in support of the Bhāṭṭa view.

Sentences are innumerable, but the word-lexicon has a manageable size. The logic of parsimony demands that it is the word that should be endowed with the designative power (*śakti*), not the sentence. Consider the following four sentences: 'Bring (a) cow', 'Bring (a) horse', 'Tie (a) cow', 'Tie (a) horse'. The child's ability to learn the language is facilitated by learning the four *words* (Sanskrit does not use articles) and their corresponding meanings (real elements of the world) as opposed to learning

the four sentences and their corresponding meanings. Add a word 'black' to each of the four sentences and see that by learning five words we can interpret eight more combinations. We can also better explain our ability to interpret new combinations which we have never heard before, such as new poetical compositions by a poet. Moreover, if there are several unfamiliar words in a sentence, we cannot cognize the sentential meaning. Using such and other arguments, the Bhāṭṭa repudiates Bhartṛhari's sentence-holism.

Against the Prābhākara, however, the Bhāṭṭa argues as follows. If isolated, atomic word-meanings are like the discrete points of distinct iron pins (*ayaḥśalākā*), how could they constitute a continuous line representing the unity of the sentential meaning? For obviously the separate elements being independent of each other, cannot naturally *merge* into each other to form the continuous line. The Bhāṭṭa's answer is that it is done through *ākṣepa*, that is, an extrapolative judgement (when word-meanings are individually cognized), or a sort of suggestive inference (*arthāpatti*) on the part of the hearer.

A few words to explain *ākṣepa* or *arthāpatti* may be in order. When what is presented seems incomplete to us we are forced to imagine some suitable additional (unrepresented) element for completion. This is called *ākṣepa*. By looking at a baby in a cradle one may imagine by *ākṣepa* that there is a mother who is around. *Arthāpatti* has a slightly different meaning. It is a proper inference from the given data. If I see that my desk is no longer in this room, I can easily infer that it has been removed (otherwise it would be impossible to explain such absence of the desk from the room under the circumstances). It is argued that our knowledge of the missing connectors between two word-meanings is suggested by such 'extrapolation' or 'inference'. Each of the words gives some independent *object* as its *complete* meaning and then since they are in a sentence together (*āsatti*) along with syntactic expectancy (*ākāṃkṣā*) and semantic fitness (*yogyatā*), we infer these appropriate connections to obtain the connected meaning of the sentence. Notice that the Bhāṭṭa plays down the logical role of *ākāṃkṣā* or syntactic expectancy. Or, he might have regarded it as simply a psychological factor. The Naiyāyika, who is the third party in this atomistic framework, emphasizes, however that the interconnection between word-meanings is derived from the 'syntax', that is, from *ākāṃkṣā*, which is defined (non-psychologistically) as the interconnectedness, order, etc., of the elements of representation.

Here the basic issue seems to touch the well-entrenched disputed area where we sometimes talk about interdependence or one way dependence between different elements or constituents (subject and predicate, proper name and general term, noun and verb) that seem to form a unity in a proposition. The Bhāṭṭa says that the designata of words are unrelated objects and hence to connect them we need a presumptive judgement

(inspired by the psychological factor 'expectancy'). On the second (Prābhākara) view the word's *designative* power extends to a designatum *plus* possible linkages with others. The word means the *related* item. Here the same underplaying the importance of syntax is noticeable. The unity of the sentential meaning is guaranteed here by the *semantic contribution* (an object plus possible relation) of the words themselves. There is no need for additional suggestive inference or extrapolative judgement to cognize this unity. The Bhāṭṭa argues in reply that on the Prābhākara theory we cannot explain satisfactorily our prompt understanding of the meaning of many new sentences which we have never heard during our days of language-learning. We may note that due to similar misgivings the 'composition' principle is thought to have some edge over the 'context' principle.

IX

It has been suggested that the Prābhākara theory of 'related designation' is an extreme form of syncategorematism.[10] The question is: does the strong context principle 'words have meanings only in the context of a sentence' necessarily entail syncategorematism? Usual examples of syncategorematic words are grammatical particles, adverbs, prepositions, etc., 'sake' in 'for the sake of', to take a typical case.

Using the older idea of a term, one can say that a syncategorematic word is one which cannot be used as a term independently but only in conjunction with other word or words. Quine[11] extended the notion to include certain adjectives, 'little elephant', 'little butterfly', 'poor violinist', and 'true artist'. In these cases, the qualifying words may have some independent meanings, but they are largely irrelevant, and from the meaning of combined phrases, meanings of such words are not (easily) separable.

Recently Paul Gochet[12] has argued that Quine on the whole prefers a syncategorematic treatment of predicates or general terms. And even if we deny this generally, we have to admit that some (at least one) predicates are syncategorematic (example 'α', & '$=$'). An extreme form of syncategorematism, it appears, would have to be a claim that all words are like this. On a milder interpretation, syncategorematism may be a vague way of underscoring the later Wittgensteinian claim that the meaning of a word is the *use* it has in language. Does the Prābhākara view come somewhat close to such a position? There is an obvious difficulty here. It is important to see the contrast. Wittgenstein's motivation was to move

[10] F. Staal, 'Sanskrit Philosophy of Language' in *History of Linguistic Thought and Contemporary Linguistics*, ed. Herman Perret, Berlin, 1976, pp. 102–36.

[11] W. V. Quine, *Word and Object*, pp. 132–3. Also *Theories and Things*, p. 68.

[12] P. Gochet, 'The Syncategorematic Treatment of Predicates', in *Analytical Philosophy in Comparative Perspective*, ed. B. K. Matilal and J. L. Shaw, 1985, pp. 61–80.

away from the idea that our talk of the meaning of a word is a talk of the object it stands for, or the entity with which it is somehow correlated. The Prābhākara's main concern was to account for how the constituent word-meanings, if they are given in isolated forms, could be *linked up, hooked up*, with one another in order to form a unity. In fact, one way to describe the Prābhākara view is to say that for him such a word's semantic value is 'an object with a hook (to pick out another object)' so that two or several of them in a sentence can naturally cling together to form a whole. Besides, if admission of syncategorematic words in language presupposes presence of *categorematic* words in combination with which they would form meaningful units, then this is not the view of the Prābhākara. For him, each word needs another to form a meaningful unit. In fact, this general point can be used as a criticism of the strong context principle, if it is construed wholly in the syncategorematic way. We must note that while both the Prābhākara view and at least some version of the context principle may tell us that the meaning of a word is the contribution it makes to the meaning of a sentence in which it occurs, the 'context' principle requires that *a word unconnected with other words cannot have a meaning* while the Prābhākara requires that *a word cannot have such a meaning as is unconnected with the meanings of other words.*

X

We shall now present the argument of the Prābhākara in defence of his theory. The Bhāṭṭa argues that the Prābhākara by making all word-meanings 'context-sensitive' faces a dilemma. Consider a two-word sentence: 'XY' meaning a connected unity. If we ask what meaning is conveyed by 'X' we have to answer that if it conveys any meaning at all then it conveys the unitary meaning of 'XY' itself. And the same is the case with 'Y'. This is so because the Prābhākara has claimed that the meaning of the word of a sentence contains within itself, though implicitly, the whole sentence-meaning, that is, the connected meaning. This seems to amount to sentence-holism. But the Prābhākara maintains that sentences are made of parts which are words and if the meaning of one part contains the meaning of the whole, the other part becomes redundant. Hence the dilemma before the Prābhākara: either redundancy or sentence-holism.

The Prābhākara answers that the word 'cow' in the sentence 'Bring a cow' or 'The cow is white' designates a cow along with the possibility of its linkage with all other possible objects, or a cow with all the possible qualities, modalities, and actions, and the second element in the sentence is necessary *only* to help us determine which *particular* linkage to the exclusion of all other possible linkages is to be taken into account.

But this is not enough. For one thing, if by the utterance of the word

'cow' one becomes aware of the cow linked up with all the possibilities (but no specific linkage is given) one is in effect aware of specifically nothing at all. It is an incomplete, and hence a very vague, awareness of meaning. (For a thirsty person a salty ocean is no better than a dry dreary desert. This analogy is from Jayanta. Knowledge of the object with all possible linkages is equal to no knowledge at all!) A dilemma arises again: (*a*) if the second word is necessary, is it so by its mere presence? If so, we again embrace sentence-holism. (*b*) Is it necessary because it *contributes* its own meaning to the whole? If so, it resolves into the Bhāṭṭa view: words give their meanings first and then the sentential meaning is derived from them.

To escape between the horns of this dilemma, the Prābhākara proceeds as follows: first he concedes that the expression 'a cow' means the object cow with infinite possibilities of linkage and the function of the other phrase 'bring' or 'is white' is to exclude other possibilities except the particularly intended one. The second phrase performs this function by its *mere presence*, not by contributing its own meaning. This is not sentence-holism. For holism demands that the combination as a whole has the *combined* (whole) *meaning* where contributions of individual elements are not *recognized* at all, *save through an artificial analysis*. But the Prābhākara theory recognizes that the second element's contribution lies only in excluding all other possible combinations save one that is intended by the sentence.

Jayanta explains the point with the help of several analogies. Cooking is the result of many factors: burning of wood, a pan holding water, etc. They all individually contribute to the combined effect, *cooking*, by performing their own functions which can be individually recognized. Similarly the unitary knowledge of the meaning of a sentence is the result of the interrelated but separately recognizable functions of its constituent words.

A wagon moves and each part is also moving. We can only *recognize* separately the mutually connected function of each part but all such parts jointly produce the motion of the wagon as a whole. The functions of such parts (or their motion) are not separable in reality. Similarly our knowledge of the meaning of a sentence is *produced* by the interrelated function of the constituent words. We can of course *recognize* the unconnected 'own' meaning of each constituent word just as we can observe the individual functions of all parts of the moving wagon, which cause it to move. But such functions do not have separate existence outside the context. We may be reminded here of an already noted comment by Dummett: in the order of *recognition*, the sense of the word is primary. But the point here straddles between both epistemic and ontological concern. Unconnected word-meanings can be recognized but it would be wrong to construe them as separate entities. Each of them can play a

role only in combination with others. The Bhāṭṭa makes a mistake of construing them as separate reals and identifies them with the (material and immaterial) objects such as a pot, blue colour, and action.

More generally, combination of factors produces a combined effect and each factor in combination produces its own *effect*, which is discernible only in that combined effect. The designative power of a word becomes manifest only in combination with other words or only when it is placed in its *natural home*, a sentence (one word sentences being allowed). A word may *remind* us of an isolated independent object, but to contribute to the sentence-meaning it must *mean* directly an object with a linkage. To put it bluntly, on the view we are considering, a word does not *mean* an isolated object, although it may *remind* us of such an object through associative psychological connection, while what it *means* is what it contributes to the sentence-meaning, that is, an object with linkage with others. In Jayanta's language:[13]

> A word does not *mean* a pure object. For we cannot find pure (isolated) words which are not functioning in combination with others. These words are not employed separately to give their 'own meanings' and then the meaning they have in combination with others. They are always used to give their meaning in combination with others. But when they are used in this way it is not that we cannot *recognize* their *own* function (or *own* meaning). Therefore the sentence cannot be a partless whole (nor can its meaning be so either), for the individual functions of the parts are recognized.

Thus, the Prābhākara believes that perils of holism can be avoided and drift towards extreme atomism can be stopped.

XI

Let us see whether we can tie up some of these different issues together. The context principle may be taken to be a very general thesis about meaning, and as a general thesis it would oppose what has been called *epistemological atomism*.[14] This is the view that at least some objects are 'given' to us in sense perception or intuition—and hence our knowledge is in the first instance knowledge of isolated objects (and their properties). This view would then construct the meaning (sense or reference) of complex expressions (sentences etc.) in terms of those sense-perceptible *givens* or the isolated objects. In *Der Gedanke*, Frege seems to have rejected this view impressionistically. Perception of objects, he said, involved grasping of thoughts. It is not to be confused with pure sensory reaction. Knowing is always *knowing that*. The context principle, viewed as a general thesis of meaning, would also oppose such atomism. This undoubtedly

[13] Jayanta (1934 edn), p. 207.

[14] See M. Dummett, *The Interpretation of Frege's Philosophy*, London, 1981, pp. 345–59. The term is used by Sluga.

offers some insight into our discussion of the Prābhākara theory which opposes a similar sort of epistemological atomism of the Bhāṭṭa school.

Kumārila Bhaṭṭa[15] cited the case of a perceptual judgement constructed out of the bits and pieces of the sense-given. We can take this to be another version of epistemological atomism, which is then extended to the philosophy of language to explain our knowledge of the connected meaning of sentences. Here is the example. Seeing a white flash moving swiftly and hearing the noise of the hoofs and neighing, one judges perceptually 'a white horse runs'. Here the bits of the sense-given are white flash, hoof-noise, and neighing, but a judgement that connects these bits together is reached through the operation of the mind. Similarly there is the operation of the mind which connects the bits and pieces of isolated meanings, to obtain the connected sentential meaning.

The Bhāṭṭa's point seems to be this. The bits and pieces of the objective world, i.e. the isolated objects themselves, possess the capacity (power) in themselves to stimulate the observer enough first to grasp the isolated objects and then to formulate a judgement that connects them together. There are presumably three constituent items in the resulting judgement. They are separable as (1) the white flash presented visually, (2) the notion of horsehood presented by the instant inference from hearing of the neighing, and (3) the notion of running presented by the inference from the noise of the hoofs. These three are presented in three different ways (through three different avenues of knowledge, *pramāṇas*) and hence presumably they are grasped as unconnected bits of objects. Having been grasped they can by themselves evoke a judgement which unites them. This shows that a judgemental knowledge is possible simply on the basis of the presentation of the isolated object-atoms themselves. Similarly let each word in the sentence present the individual unconnected meaning (objects, properties, actions, etc.). When such isolated meanings are grasped, there will automatically arise the judgement of the connected sentential meaning.

The Prābhākara disagrees. The example, he says, is wrongly construed. There is no doubt that the three bits of object are separately presented in the given example, their sources being different in each case. But a connected judgement automatically arises in the person, as soon as he can locate all these three bits into one spatial location or in one particular substance, the horse. Śālikanātha following the Prābhākara argues that if the person is simply unaware or uncertain of the connectedness of the three bits, he would have three disconnected awarenesses: 'There is a horse there, something is white, and somebody is running.' But from the bits and pieces of the *given*, the required judgement, 'A white horse is running' arises since he can recognize both neighing and the action of

[15] The discussion here centres around a frequently quoted verse of Kumārila Bhaṭṭa. We follow the explanation by Jayanta and Śālikanātha.

running as belonging to the (same) substratum where the white flash belonged. Or, if he is *un*aware of the lack of connection of these objects he would have the required judgement. The judgement may finally be based upon knowledge of connected facts or, even lack of knowledge of the *dis*-connection of isolated bits. In the case of a sentence, the words themselves as constituents provide, by way of presenting their *meanings*, such connected facts, but since such connected facts and the sentential meaning are not different from each other, we know the sentential meaning directly from the knowledge of the words and need not go through the collection of (word-) meaning-atoms.

Śālikanātha was concerned with the epistemological question: how do we as hearers know the sentence-meaning with our usual linguistic competence (*vyutpatti*)? But it is by no means clear whether an ontology of connected facts is conceded here by the Prābhākara. Perhaps not. What is asserted is rather that word-meanings properly understood are connected facts, not isolated, unconnected bits of object. For otherwise it would be impossible to derive knowledge of the connected sentential meaning from unconnected bits. To imagine any additional device as the Bhāṭṭa does, for providing the required connection between isolated objects would be going against the principle of parsimony.

The Prābhākara points out that the Bhāṭṭa may be violating the principle of parsimony in more than one way. The Bhāṭṭa imagines first that the words have one kind of dispositional property, that of being able to produce in the hearer the cognition of their 'own' (individual) meanings. Second the word-meanings themselves (objects, properties, actions) should then have the disposition to generate the hearer's cognition of the linkages among themselves. Moreover, the words must have another dispositional property for producing in the word-meanings such a (second) dispositional property as would be capable of generating the cognition of the linkages. So the Bhāṭṭa view implies that there should be in all three dispositional properties, two in the word itself and one in the word-meaning, in order that we can account for the verbal cognition of the whole sentence meaning satisfactorily. If, however, we agree, along with the Prābhākara, that words themselves have a dispositional property—that of producing in the hearer a cognition of their 'own' meanings plus linkages—then we can practice the desired *economy* of dispositional properties (one instead of three). Besides, when we deal with language we can never find a word that is *only* a word being completely isolated from other words, for at the end some sort of word such as 'is' or 'exists' will be understood always when one word is uttered or heard. Hence a cognition of its meaning will necessarily bring in the linkage, its connection with the meaning of the other word through association.

The dispute between the two groups rolled on for several centuries. Their arguments and counter-arguments became increasingly subtle and

technical. At some point, the exponent of the Prābhākara conceded that the isolated meaning of the word without the linkage can very well be *recollected* by the hearer as soon as the word is heard. And this facilitates our language learning procedure. The Prābhākara confirmed: the isolated meaning, the object cow, from the word 'cow', is quickly recollected because of *intensity* and *recurrence*. But this recollection simply facilitates our awareness of the proper meaning of the word in the context; we become aware of the object cow plus its possible relation, and the second awareness yields the knowledge of the connected sentence-meaning. With this concession, it was claimed that it became a more defensible theory about meaning, which avoided the problem of sentence-holism as well as that of 'unconnectedness' which the extreme forms of atomism might imply.

If connected facts are not admitted as real entities 'out there' but at the same time it is claimed that words in a sentence designate connected items, that is, objects with linkage, and not objects as such, then this 'designation' relation of words is supposed to pick out what we may call *epistemic* objects, not the actual items or objects in the domain of the reals. It is our knowledge of such a 'designation' relation of words that gives us the knowledge of the sentence-meaning as a whole. This seems to call for a tentative distinction to be made between the isolated objects, the *ontological* domain, and what we call a *semantic* domain which will include designata of words, such connected facts, the *epistemic* objects, that is, objects with linkage. We are not however sure whether the Prābhākara would be accepting this consequence, but this seems to follow from his view.

Dummett repeatedly says that the context principle as applied to reference (as applied to sense, the principle seems to him unproblematic) created a *tension* in the kind of realism that informs Frege's whole philosophy. The Prābhākara view is an attempt to avoid a *crude* theory of meaning, which demands that the meanings of our words be construed as independent and isolated pieces of reality. We have shown that the Prābhākara can avoid this construal and still maintain realism in his ontology by confining his doctrine of meaning to epistemological level; it becomes an epistemological thesis about the origin of our knowledge of sentence-meaning. The moral seems to be this. If we flout the context principle, as well as the Prābhākara view of connected facts as word-meanings, we are hard put to explain how we recognize the connectedness of these individual atoms in our judgements. In fact, this will be a general problem for any form of atomism, epistemological or ontological.

To conclude: it is obvious that the context principle was formulated to answer presumably a different set of questions, but some of the philosophical issues raised by it were not entirely different from the issues raised by the age-old controversy between the Bhāṭṭa and the Prābhākara about

how we grasp the (whole) meaning of the sentence. Among other things, Frege was concerned with the dismissal of the psychologistic interpretation of number-entity. That was apparently not the concern of the Indian philosophers we have talked about. It is however not clear whether Frege was making an epistemological point about how we grasp thoughts, or an ontological point about the parts in the context of the whole. He did seem to worry at times about how the whole manages to hold together. The Prābhākara, on the other hand, explicitly makes an epistemological point about how we grasp the sentence-meaning. By positing such semantic or epistemic objects as things, properties or actions with possible linkages, constituting the domain of the meaning of words in a sentence, he steers clear of the two extremes: the Scylla of crude realism implicit in the extreme atomism of the Bhāṭṭa and the Charybdis of a sort of idealism implied by Bhartṛhari's holism.

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Appendix

1. On page X of *The Foundation of Arithmetic* (J. L. Austin's translation) Frege writes: 'Never to ask for the meaning of a word in isolation, but only in the context of a proposition.' The principle is here laid down as one of the three principles Frege says he has kept to in his enquiry in the book. So it does seem that the principle is laid down as a *methodological principle* (or a *heuristic device*). He explains, after laying down the principle, that a violation of this principle forces one to take mental pictures or acts as the meanings of words, and thus to a violation also of what is now known as anti-psychologism. (The three principles which are laid down by Frege in the *Introduction* are anti-psychologism, the context principle, and the object-concept distinction.)

2. In Section 60, p. 71, Frege says: 'Only in a proposition have the words really a meaning.' Here, the principle is invoked to argue that from the fact that we cannot form a (separate) idea (i.e. mental picture) for a number word it does not follow that it does not have any meaning. Thus he adds: 'It is enough if the proposition taken as a whole has a sense; it is this that confers on its parts also their content.' It is very significant however that in the *second part* of the sentence Frege speaks like a (sentence-)*holist*: it is the sense of the sentence which confers on the words the content which they have.

3. Two pages later, in Section 62, p. 73, Frege talks again of the context principle in the same manner.

4. Frege refers to the context principle again towards the end of the book, while giving a resume of his investigations in the *Foundations*, in Section 106. On page 116 he writes the following:

We next laid down the fundamental principle that we must never try to define the meaning of a word in isolation, but only as it is used in the context of a proposition: only by adhering to this can we, as I believe, avoid a physical view of number without slipping into a psychological view of it.

Reference to the idea of definition in context seems to suggest the case of contextual definition of words and sub-sentential expressions. Wittgenstein's own form of the context principle was inspired by the second and third formulations in Frege. In 3.3 of the *Tractatus* he writes: 'Only propositions have sense; only in the nexus of a proposition does a name have meaning.' Wittgenstein uses two terms in German while expressing the context principle—'Sinn' and 'Bedeutung'—and the first in connection with propositions (sentences), while the second in connection with names. If this is taken really seriously, we can take Wittgenstein to have said that the sense is something which belongs to the sentence, and not to the words, not especially to names; and the names have reference, as opposed to sense, but the reference of the name is determined by the sentential context in which it occurs. If there is anything in this interesting idea, what Wittgenstein advocated in the *Tractatus* must be very different from what the context principle is taken to say in any of its interpretations we have discussed, and for which we have any textual evidence.

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THE SENSE-REFERENCE DISTINCTION IN INDIAN PHILOSOPHY OF LANGUAGE

It is generally accepted that Indian philosophers of language do not posit sense as a component of the meaning of an expression in addition to its reference.* There is, for instance, no notion of analyticity – of propositions which are true by virtue of meaning alone – in Indian philosophy. Likewise no distinction is drawn between contingently and necessarily nonexistent objects: Two stock examples of a nonexistent are the horns of a hare and the son of a barren woman, and these two examples are treated as in all respects alike. We find instead a more or less pure reference theory of meaning: The meaning of an expression is that entity which the expression designates. Here the name-bearer relation seems to reign supreme as the central metaphor of semantics. I shall, however, argue that, predominant though the reference theory might be, certain Indian philosophers of language were nonetheless forced to recognize sense as a distinct element in meaning. That the sense-reference distinction was never extensively made use of by Indian philosophers of language is clear; I shall not be concerned to dispute this or attempt to explain it. Instead I wish to explore how recognition of something sense-like is forced on philosophers working in a tradition dominated by semantic realism. I suspect we may discover something important about the motivation behind the sense-reference distinction through such an exploration.

1.

We would do well to begin with the sense-reference distinction as it is employed in the Western tradition. Here, the distinction appears to have originated with an attempt to account for differences between the semantic behavior of proper names and so-called general terms. While the proper name 'Aristotle' might be said to have as its meaning its bearer or referent, Aristotle, it seems odd to say that the meaning of 'human' is the class of humans. Instead, such thinkers as Reid, Whately, and Mill held that the meaning of a general term is a property or set of properties: Such a term denotes the members of its

extension by virtue of this descriptive backing or connotation, and to predicate a general term of a particular is to convey the information that the particular has that property or set of properties. It is now generally accepted that nonempty proper names have reference and predicative expressions have sense. With respect to the latter, one widely held view is that a sense is an idea or concept, a purely mental representation which a competent speaker associates with a term. This tendency to see senses as mental contents is no doubt often motivated by nominalist scruples about allowing properties into one's ontology; but it may also reflect the intuition that an adequate account of the meanings of predicative expressions must somehow be made to fit into the general scheme of propositional attitude psychology.

It was Frege who first claimed that all meaningful expressions – singular terms, predicative expressions, and sentences – have both sense and reference. The claim that proper names have senses has been the subject of much controversy, but it is generally conceded that Frege's puzzle about identity statements must somehow be answered: The statement, 'Hesperus is Phosphorus' is informative, yet if the meanings of the names 'Hesperus' and 'Phosphorus' were just their referents, then the statement should be no more informative than 'Hesperus is Hesperus'. Thus it appears unarguable that part of the meaning of a proper name is the information value it has, the contribution it makes to the cognitive content of a sentence in which it occurs. What is far more controversial is Frege's identification of this aspect of the meaning of a proper name with a distinct notion, that of the means a competent speaker employs in identifying the referent of a proper name. In particular, Frege is often alleged to have held that the meaning of a proper name is that one definite description that any competent speaker must associate with the name. Here the root issue appears to be whether understanding a proper name involves having a theory about its referent: Must we ascribe propositional knowledge of any sort to the competent speakers of a language to explain their use of a proper name? Those who deny that proper names have senses would of course agree that there is something that fixes the reference of a proper name, but they deny that a competent speaker need have any conceptual representation of this reference-fixing device to use the term; one need not have in mind any explicit or even implicit theory about the referent to know the meaning of a proper name.

This approach leaves unanswered Frege's original question about

the informativeness of identity statements involving proper names. One possible solution involves what McDowell[1] calls an austere theory of sense: The statement,

'Hesperus' denotes Hesperus

states the reference but *shows* the sense of 'Hesperus'. To satisfactorily interpret the behavior of speakers of the language, we must ascribe to them knowledge of this proposition, as opposed to, say, the knowledge that 'Hesperus' denotes Phosphorus. Here there is no pretense that the competent speaker need have any theory as to how he or she picks out the referent of 'Hesperus' – it is possible that this feat can be explained in terms of purely neural machinery. But such machinery cannot explain all the facts about speaker behavior: In particular, it does not explain the fact that certain speakers use the statement, 'Hesperus is Phosphorus' to express more than just a truism.

Our goal in this section is not to find a workable solution to the problem of the semantics of proper names, but rather to determine what is generally meant by the sense-reference distinction. Frege's description of sense as the mode of presentation of reference is suggestive but unclear. What emerges from the controversy over proper names is that sense involves propositional knowledge or knowledge-that, as distinct from mere associative knowledge.[2] The champion of senses for proper names insists that we cannot adequately explain speaker's behavior unless we take the speaker to associate name with bearer in some particular way, a way that can only be expressed in terms of propositional knowledge. There is disagreement as to what such knowledge might consist in – a definite description, or fuzzy set of definite descriptions, or the bare knowledge that 'Hesperus' denotes Hesperus. But such theorists hold in common that to understand the use of 'Saul Kripke' in a sentence is to be *en rapport* with Saul Kripke in a particular way, a way that is different in kind, by virtue of its having some information content, from the manner in which one is *en rapport* with Saul Kripke when one sees or touches him; and which may also differ in content from the way one might think of Saul Kripke in understanding the name, 'little Saulie from grade school'.

Frege's claim that predicative expressions have both sense and reference is controversial for the opposite reason: It is generally

agreed that such expressions have sense, but the notion that they have reference is widely disputed. For Frege, the referent of the expression, 'is a prime number' is a function that maps objects onto truth-values (onto True for the prime numbers, onto False for all other objects); the sense of the expression is the manner in which any competent speaker grasps this function. Frege seems to have thought that such a distinction is called for at least in part because, in the case of two coextensive predicates, one may grasp the functions associated with the terms in different manners, such that one is competent in the use of each (intuitively, 'knows their meanings'), but does not recognize their extensional equivalence. The notion that predicative expressions have reference has been resisted because it seems to some ontologically profligate to add unsaturated or incomplete entities to the realm of reference (i.e., the world) when it is generally agreed that a competent speaker must have some criterion of application in mind in order to use a predicative expression: Why posit such strange entities when we can explain speaker behavior solely on the basis of knowledge of the senses of such expressions? (Frege held the referent of a predicative expression to be an unsaturated entity – a function with its argument-place(s) unfilled – where others, such as Strawson and C. I. Lewis, would take it to be a universal or property; Frege's choice was dictated by his application of the context principle to the problem of sentential unity, about which we shall say more below.)

Once again, we are concerned not to settle the dispute, but to see what it tells us about the sense-reference distinction. Here too we find that senses have cognitive content – they hook up somehow with a speaker's propositional attitudes. To know the sense of a predicative expression is to have some piece of propositional knowledge that one uses in determining the truth-conditions of sentences in which it occurs. Here as well we can envision more and less austere versions of a theory of sense. But if Frege is right then we must attribute some such propositional knowledge to the speaker, in addition to the mere ability to employ the function (which, again, can be explained in terms of purely neural machinery), if we are to account for speaker behavior.

I wish to show how certain Indian philosophers, working within a tradition dominated by the reference theory, came to posit sense as a distinct component of meaning. I shall present two episodes in Indian semantics. The first occurs within a nominalist school, the Yogācāra-Sautrāntikas of the Buddhist tradition. Here we shall find the philoso-

pher Dharmakīrti responding in the normal nominalist's fashion to the realists' use of universals to explain the semantics of predicative expressions. However, his reasons for positing sense are not what we might expect, for the semantics he develops yields a reference for a predicative expression, namely, that part of its extension that it denotes in a sentence in which it occurs. That is, Dharmakīrti does not follow the well-trodden route from rejection of real universals or properties to mental representations as the meanings of predicates. Instead, his account of our application of predicates leads him to take the particular as the referent of such a term on an occasion of use. It is only when faced with the difficulty of explaining how a statement asserting two predicates of the same particular can be informative that he is forced to distinguish between the referent of an expression and another component of its meaning, its cognitive content or sense.

The second episode occurs within the Prābhākara Mimāṃsā school of orthodox Indian philosophy. This school accepts an ontology sufficiently rich that an appropriate referent can readily be found for each kind of term in the lexicon: substances for proper names, property-particulars for adjectives, actions for verbs, universals for natural-kind terms, etc. Thus here too it is not ontological scruples of the usual sort that lead the Prābhākaras to the threshold of the sense-reference distinction; in this case it is their adherence to the context principle, the principle that only in the context of a sentence does a word have meaning. What I shall seek to show is that their application of this principle to the process of sentence comprehension leads them to distinguish between the entity denoted by a term and the manner in which one becomes *en rapport* with that entity through understanding the term. This, I shall argue, is tantamount to the sense-reference distinction as described above. Of particular interest here is that the Prābhākara theory yields what I take to be a more plausible motivation for the sense-reference distinction as applied to predicative expressions than that which Frege provides.

2.

In his remarks on inference in *Pramāṇavārttika*,[3] the Buddhist logician Dharmakīrti says something that is clearly relevant to our investigation. According to the Buddhist logicians, an inference has the

following basic structure:

> x is qualified by P
> because x is qualified by R.

Here x is an entity or set of entities, P is a property which is meant to be proven to qualify x, and R is some property (the 'reason') which is asserted to be an indicator or mark of the presence of P in x. The example which Dharmakīrti discusses is this:

> This is impermanent
> because it is a product.

About this inference Dharmakīrti makes the following claim: For any entity which is a product, its productness is ultimately nondistinct from its impermanence. The reasons for this seemingly odd claim are to be found in certain basic tenets of Yogācāra-Sautrāntika metaphysics. According to this radically nominalistic school, only unique particulars exist. There are no universals or properties, and there are no resemblance relations among particulars. It is concluded from this that a property is ultimately nondistinct from the particular that possesses it. It would then follow that whenever two properties are properly predicated of a particular, those properties are themselves nondistinct.

Now granting all this, let us look at the difficulty which Dharmakīrti's claim creates for his account of this inference. It is objected that such an inference must then commit the fallacy known to Indian logicians as 'reason as part of the meaning of the thesis'. In our example, the thesis is, 'This is impermanent', and the reason is 'product'. Clearly, the objection is that here 'impermanent' and 'product' have the same meaning, referring as they do to identical properties, so that the inference could be reformulated as:

> This is impermanent
> because it is impermanent.

Thus the inference is question-begging. Now we might be tempted to say in response that the inference is nonetheless valid if productness and impermanence are identical. It is not open to Dharmakīrti to reply in this fashion, however, since his concern is to show that inferences of this sort are valid means of knowledge (*pramanas*), and a cognitive act cannot count as a valid means of knowledge unless it results in cognition of a proposition not previously known to the cognitive

agent. Thus the thesis of a true inference must be a proposition which the inferrer does not yet know to be true; and in order to perform a question-begging inference, one must already know the thesis to be true. The objection, then, is tantamount to the claim that, given Dharmakīrti's description of inferences of this sort, all such inferences are uninformative.

The parallel with Frege's puzzle concerning the informativness of certain identity statements should be clear. It is alleged that when the sentences,

(1) This is impermanent

and

(2) This is a product

are both true, the referent of 'impermanent' is the same entity as the referent of 'product', viz., the entity demonstrated by 'this'. On the assumption that meaning is just reference, (1) and (2) should not then differ in meaning, so that the inference in question should not be informative. But it clearly is informative.

And just as the puzzle parallels Frege's, so will the general outline of the solution: Dharmakīrti's strategy will be to attack the assumption that meaning is exhausted by reference. But my aim here is not simply to point out that Frege was anticipated by some twelve centuries. The senses that the Buddhist introduces will turn out to differ in important respects from Fregean senses. To see this, though, we must first examine the semantics that Dharmakīrti develops to account for our use of predicative expressions.

The Buddhist nominalist is faced with the standard difficulty of explaining how, in the absence of real properties, it can be true of this piece of paper that it is a product but false of it that it is a cow. The solution proposed by Yogācāra-Sautrāntika is to be found in the *apoha* theory of Buddhist semantics. According to this theory, the meaning of the general term 'cow' is given by the formula 'not noncow'. This is proposed as the nominalist alternative to the semantics of such Indian realists as the Naiyāyikas, who maintain that the meaning of 'cow' is the universal cowness which inheres in each of the infinitely many particulars that are cows. Thus the *apoha* theory is meant to provide a way of characterizing all and only those particulars belonging to the class of cows without commitment to the existence of any property or

set of properties common to the members of the class. This theory may be represented formally as follows. Associated with each term t is some one particular p_c. Then with p ranging over the domain D of particulars, the meaning of a term t is $\hat{p}(\sim\!\!-p_c p)$ (read: p such that it is not non-p_c). The $\sim$-function yields a pseudo-predicate when it takes particulars as arguments. This function may be analyzed in terms of the two types of negation of which it is composed – verbally bound (*prasajya-pratisedha*) and nominally bound (*paryudasa*). For each p in the domain D, $-p$ yields an ordered pair of sets, $\langle S_1, S_2\rangle$, with S_1 the extension of $-p$ and S_2 the anti-extension of $-p$ (i.e., $S_1 \cup S_2$ is a proper subset of D; cf., choice negation). For each p_i, S_2 is a set with just one member, namely p_i. Application of verbally bound negation to this pair yields a pseudo-predicate whose extension S_3 is the complement of S_1 (i.e., $S_1 \cup S_3 = D$; cf., exclusion negation). We call this a pseudo-predicate because its extension has been determined in such a way as to avoid commitment to the existence of any characteristic or set of characteristics common to the members of S_3.

This theory has the following psychological model. The variable p ranges over mental images. A mental image is a sort of inner representation which may be caused either through perceptual cognition, or through cognition of the appropriate word once the conventions governing the use of that word have been learned. Given that both external particulars and mental images are absolutely unique and devoid of resemblance relations, one wonders how such conventions could be learned in the case of class terms. Consider the term 'cow', and suppose its extension to consist of images $p_1, \ldots, p_i$, each of these images being the sort of representation that would be caused were one in the right type of cognitive relation to what is commonly called a cow. Now an image, say p_1, manifests itself to consciousness in such a way as to be incompatible with or exclude the occurrence of a certain set of images which might otherwise occur, say the set $(p_{i+1}, \ldots, p_k)$. (Here $D = (p_1, \ldots, p_k)$.) Assume that the particular image p_c associated with the term 'cow' is p_1. This association comes about through p_1 having been the representation produced on the occasion of learning the term. Now $-p_1 = \langle(p_{i+1}, \ldots, p_k), (p_1)\rangle$. Verbally bound negation is to be interpreted as absolute rejection of a set of images as a qualifier of a given image without commitment to the existence of some alternative qualifier as qualifying the given image. Thus to say of some representation p that it satisfies not non-p_1 is just to deny that it

is a member of the set $(p_{i+1}, \ldots, p_k)$. But given that verbally bound negation functions like exclusion negation, this also means that the image in question must belong to the set $(p_1, \ldots, p_i)$. Thus the expression '$\sim -p_1$' is a way of characterizing all those representations which belong to the (direct) extension of the term 'cow', a way which does not make use of the notion of a real property of cowness.

How, then, does one respond to the command, 'Fetch a cow'? Having learned the relevant convention for 'cow', one knows that the word refers to anything which satisfies the pseudo-predicate $\sim -p_1$. Now when we stand in the right cognitive relation to a real cow-particular, this causes the occurrence of a representation which satisfies the pseudo-predicate, since each cow-representation is endowed with the causal capacity to exclude the set of images $(p_{i+1}, \ldots, p_k)$. Thus we can recognize any representation from the set $(p_2, \ldots, p_i)$ as belonging to the (direct) extension of 'cow' simply by noting that the recollected image p_1 (which in effect serves as a paradigm) does not exclude that representation.

We can now see how an ultimately unique particular may correctly be said to be a product. We are also now in a better position to understand Dharmakīrti's claim that, strictly speaking, the productness of the particular is nondistinct from that particular itself. That about the particular which makes it correct to predicate 'product' of it is its capacity to produce a mental image which excludes certain other images. But this capacity of the particular is just an expression of the difference of the particular from all other particulars, i.e., its uniqueness. Now it is true that when we conceive of the particular as a product, we are not attending to its difference from all other particulars. There are, after all, certain particulars which are in neither the extension nor the anti-extension of the nominally bound negation of its image when that image is taken as an exemplar of 'product', namely those other particulars which are products. As Dharmakīrti puts it, 'Words are ultimately based on just the particular, but they disregard the difference [of the particular] from everything else because they direct [attention] to just one difference.'[4] It is one difference which makes this particular a product, another difference which makes it a piece of paper. Dharmakīrti's point, though, is that we conceive of the particular as a product by disregarding its difference from those other particulars which are products. And our disregarding of that difference is, according to Dharmakīrti, a mere case of conceptual

falsification. To recognize the productness of the particular is just to recognize its uniqueness – its difference from all other particulars – without attending to all of its differences. Hence at the level of ultimate truth, when we remove the results of all conceptual falsification, we are forced to say that about the particular which makes it correct to predicate 'product' of it is just its uniqueness, that is, the very particular itself.

We can now see why Dharmakīrti claims, first that both 'product' and 'impermanent' may properly be predicated of a particular, and second that the particular's productness and its impermanence are ultimately nondistinct. This brings us back to the original problem. It is, once again, alleged that the inference,

This particular is impermanent
because it is a product,

is not a valid means of knowledge, in that the reason 'product' is part of the meaning of the thesis, 'This particular is impermanent'. Dharmakīrti responds to this objection as follows:

With respect to a single entity, there are as many exclusions as there are things with distinct forms. For that is different from the cause or effect which possesses the absence of that. And thus there are as many terms as there are exclusions, the terms having conventional meaning through exclusion by means of the effect and cause of that. Thus [the sentence], 'Speech is the immediate consequent of effort and the cause of hearing,' has meaning by virtue of excluding what is not the effect or cause of that. Thus even though there be nondifference of essence [from property-possessor], that specific difference which is conceived of by means of some property or other cannot be conceived of by means of any other; it is not the case that all words are synonymous.[5]

The example of the term 'speech' is instructive. Any particular which is an instance of speech may be said to be both a product of effort and a cause of hearing. Thus for any particular instance of speech, the product-of-effortness of that particular and the cause-of-hearingness of that particular are essentially identical. We know, however, that the class of things denoted by 'product of effort' and the class of things denoted by 'cause of hearing', while overlapping, are not coextensive. Let us consider a world consisting of just ten particulars; that is,

$$D = p_1, \ldots, p_{10}.$$

Suppose, further, that

-(product of effort) $= (p_1, p_2, p_3, p_4, p_5, p_6)$,
-(cause of hearing) $= (p_5, p_6, p_7)$.

Thus we might have learned the meaning of 'product of effort' by noticing that the learning paradigm for this term produces an image which excludes the images produced by $p_1, \ldots, p_6$; and similarly for 'cause of hearing'. The extensions of these terms are, as usual, determined by the verbally bound negation of the nominally bound negation of the learning paradigm. Hence,

$$\sim\text{-(product of effort)} = (p_7, p_8, p_9, p_{10}),$$
$$\sim\text{-(cause of hearing)} = (p_1, p_2, p_3, p_4, p_8, p_9, p_{10}).$$

Suppose, further, that 'speech' denotes the particulars p_8, p_9 and p_{10}. Then an instance of speech such as the particular p_8 may correctly be said to be both a product of effort and a cause of hearing, occurring as it does in the relevant extensions.

Now one way of understanding the thesis that all reals are unique is that the essence of a particular is just its difference from all other particulars. Thus we might say that the essence of p_8 is given by its *verbally* bound negation:

$$\sim p_8 = (p_1, p_2, p_3, p_4, p_5, p_6, p_7, p_9, p_{10}).$$

Suppose that p_8 were the learning paradigm for one or another of the two terms 'product of effort' or 'cause of hearing'. If it were to serve as the paradigm for the former, then we would direct our attention to a proper subset of the extension of this verbally bound negation of p_8, namely $(p_1, \ldots, p_6)$. If it served as a paradigm for the latter term, then we would direct our attention to a distinct subset of the extension of this verbally bound negation of p_8, namely (p_5, p_6, p_7). Once again, Dharmakīrti does not take this fact – that the terms are applicable to the particular by virtue of distinct subsets of the extension of the total nominally bound negation of the particular – to show that the particular bears two distinct properties, product-of-effortness and cause-of-hearingness. When we, for instance, conceive of p_8 as a paradigm of product of effort, we do so not by attending to some feature of p_8 whereby it excludes $(p_1, \ldots, p_6)$, but rather by disregarding or overlooking the fact that p_7, p_9, and p_{10} also belong to the extension of its verbally bound negation. It is our failure to take in the entire exclusion class which makes it possible for us to view p_8 as a product of effort, not some special feature of p_8 itself. But the point which Darmakīrti is most concerned to make here is that the two subsets are distinct. Thus

we cannot conclude from the fact that one of these terms is applicable to the particular that the other must be as well. And this, according to Dharmakīrti, counts as showing that the two terms must differ in meaning.

And now consider what happens when we have two terms *t* and *t′* which are in fact coextensive. In the above example we used an artificially small domain, but for most terms both the exclusion class and its complement (the extension of the term) are so large as to make it impossible to hold all their members before the mind at once. Thus in general we determine that a particular p_n belongs to the extension of *t* by noting that its image is not excluded by the image of the learning paradigm for *t*. This means that we may know the learning paradigms of both terms, know that both terms are predicable of particulars p_m, p_{m+1}, p_{m+2}, know of no particulars of which one but not the other term is predicable, know that term *t* is predicable of p_n, but still not be able to determine from these facts alone whether *t′* is also predicable of p_n. Indeed this will hold regardless of whether *t* and *t′* differ in extension (like 'product of effort' and 'cause of hearing') or are coextensive (like, according to the Buddhist, 'product' and 'impermanent').

When a term *t* is correctly predicated of a particular *p*, its referent is just *p*. But our ability to assert *t* of *p* depends on some subset of the verbally bound negation of *p* being the same as the exclusion class determined by non-*t*. Dharmakīrti's first point in his response to the uniformativeness objection is that two terms *t* and *t′* may both have *p* as their reference yet differ in the subsets of *p*'s verbally bound negation which they select. This counts, for him, as establishing a difference in meaning. His second point is that knowing this part of the meaning of *t* as applied to *p* need not even consist in being able to fix the boundaries of the relevant subset. It may consist in nothing more than knowing that *p* is like the paradigm for *t* in not being non-*t* – something we establish by seeing if the image produced by *p* is excluded by the paradigm's image. Thus it is possible to know what it would mean to assert two terms *t* and *t′* of *p* without knowing whether the subsets of *p*'s verbally bound negation which they select are the same or different. This is why it is possible for one to know the meaning of 'product' and 'impermanent', know that 'product' is predicable of a particular, and not know whether 'impermanent' is also predicable of that particular. It follows that the inference in question is

a valid means of knowledge, in that it can produce cognition of a previously uncognized proposition.

In effect, Dharmakīrti is here distinguishing between the sense and the reference of a predicative expression. As a nominalist working within a tradition dominated by the reference theory, it is natural that he should take as the referent of such a term that particular in its extension that is denoted on an occasion of use. *Apoha* semantics explains how this is possible, and in doing so it turns the predicate into a kind of demonstrative, an expression whose referent in any occurrence is just a particular but which may be used to denote distinct particulars on different occasions. But the problematic inference shows that the meaning of such a term in a sentence is not just its demonstratum. In order for this inference to be informative, the sentences, 'This is a product', and 'This is impermanent', must somehow differ in propositional content when asserted of the same particular. The difference lies in the manner in which the particular is presented in the two sentences: in the first, by way of not belonging to the exclusion class formed by the paradigm image for 'product'; in the second, by way of the exclusion class for 'impermanent'. Now in fact these two exclusion classes are coextensive, but the competent speaker need not know this. (For the Buddhists this is an *empirical* discovery, which comes about through the failure of a reasoned search for counter-examples.) All the competent speaker need know is that that is a product which is $\sim-p_p$ and that that is impermanent which is $\sim-p_i$. And since p_p, the paradigm for 'product', will in general be a different image than p_i, the paradigm for 'impermanent', the mode of presentation of the particular denoted by 'this' in the two sentences will also differ from one sentence to the other.

It is important to point out that what I am calling sense in Dharmakīrti's semantics is not the mental image that serves as paradigm for a term. Dharmakīrti's is not an idea theory or a conceptualist theory of meaning. For the Buddhists the psychological machinery that explains our use of words is purely causal in nature and semantically invisible. Indeed there is here no *entity* whatever that is the sense of an expression. To say of a term that part of its meaning is its sense is to say that the term presents its referent in a particular way, that understanding a use of the term involves thinking of the referent in a manner that involves propositional structure. This is just what Dharmakīrti is claiming. To understand the statement of identity,

'This is a product', is to grasp the particular denoted by 'this' *twice*: once as just this unique particular that is different from every other particular; but also as a particular that is different from those particulars in the exclusion class formed by the paradigm for 'product'. The first grasping is direct and nonpropositional; the second is a grasping of that particular by way of the sense of 'product'.[6]

Several points emerge from all this. First, it should be noticed just how austere a theory of sense this is. To understand the sense of 'product' is not to have a theory about those things that are products. (If one understands the term, then one will no doubt have various beliefs about products, but these beliefs are not part of the word's sense.) The senses that Dharmakīrti introduces will not support a doctrine of truth by virtue of meaning alone.

Nor are these at all like full-blown Fregean senses. Salmon[7] distinguishes among three components of Frege's notion of sense: the psychological – the purely conceptual representation which a speaker associates with a term; the semantic – that which fixes the reference at a possible world; and the cognitive – the information content that a word contributes to a sentence in which it occurs. Frege held that it is one thing that accomplishes all three tasks. Salmon makes the point that while a Kripkean direct reference theory is incompatible with this full-blown Fregean sense of sense, it is quite compatible with a leaner sense theory, in particular one that takes sense to be just the cognitive content of a term. Dharmakīrti's introduction of senses yields a kind of historical buttressing of Salmon's point. It is clear that a purely referential theory of meaning exerts a very strong pull on Dharmakīrti: The semantics of *apoha* is constructed in just such a way as to guarantee a referent for each meaningful term. He abandons a pure reference theory only in response to the informativeness puzzle, and the senses he introduces play no other role than that of cognitive content. The sense of 'product' is not the mental image a speaker associates with the term. Nor is it that which fixes the reference of the word – that job is done by the causal chain that extends back to the establishment of the convention governing the word's use. The sense of 'product' is just the information conveyed by its occurrence in a sentence – that its referent is different from the nonproducts.

The second point that emerges is more strictly historical in nature. In the Western tradition senses first emerged as part of a general strategy for handling predicative expressions without invoking real

universals. It is only relatively recently that the informativeness puzzle, and the allied phenomenon of referential opacity, have become important motivators of the sense-reference distinction. Dharmakīrti's discussion shows that it is not nominalism per se that leads to senses. By treating the predicate as a quasi-demonstrative, his theory yields a reference for such terms and thus appears compatible with a pure reference theory of meaning, until the informativeness puzzle arises. This is important because of the light it sheds on the controversy over the semantics of proper names. I suspect that much of this controversy stems from a tendency to associate the sense-reference distinction with the distinction between a particular and its properties. The semantics of Buddhist nominalism suggests that this association is mere historical accident.[8]

3.

The Prābhākara school of Mimāṃsā might seem an odd place to look for clues concerning the sense-reference distinction. The Prābhākaras are both metaphysical and epistemological realists. Their metaphysical realism obviates the need for any complex function to serve as criterion of application of a general term: Since the universal cowness is perceptible, our ability to recognize a particular as the sort of thing that is called a cow is readily explained by our ability to perceive the cowness which inheres in that particular. Their commitment to epistemological realism means that the object of any cognition will have to be an extra-mental, extra-linguistic entity. Since the Prābhākaras think of sentences as serving, under specified circumstances, as means of knowledge, it is natural that they should think of our cognition of sentence meaning as the direct awareness of some extra-mental, extra-linguistic entity. Thus a strong form of semantic realism, in particular a strong form of the reference theory, is a natural outcome of their metaphysical and epistemological realism. Prābhākara would thus seem an implausible candidate for a discussion of the sense-reference distinction. This school is nonetheless forced to admit something sense-like into its account of sentence comprehension. Our task shall be to see how this admission emerges out of its investigation of how we understand sentences.

In Indian philosophy of language there are three basic positions on the comprehension of sentences: the pure sentence theory, the designated relation theory, and the related designation theory. These positions can be seen as deriving from two basic principles which can guide our investigation of sentence meaning. The first is the context principle, according to which a word has meaning only in the context of a sentence. In its Indian manifestation this principle is generally supported by the observation that we never employ words in isolation, but only within sentences. The second principle is the composition principle, according to which the meaning of a sentence is a function of the meanings of its constituent words. This principle is generally supported by the observation that we understand a sentence only if we know the meanings of all its component words.

According to the sentence theory, the sentence is the basic, indivisible semantic unit. Word meaning is a mere theoretical construct of the science of grammar. Words stand to sentences, the sentence theorists claim, in the relation which we ordinarily believe to obtain between phonemes and words. While we would all agree that a word cannot be understood unless we cognize all of its constituent phonemes, we would not say that a phoneme is a semantic unit. By the same token, the sentence theorist argues, while we cannot understand a sentence unless we cognize all of its words, the fact that words are never used in isolation shows that the word is likewise not an independent semantic unit. This theory is obviously guided by the context principle to the exclusion of the composition principle.

The designated relation theory, by contrast, maintains that the word is the basic semantic unit. A word has as its meaning the entity which it designates.[9] Thus 'Devadatta' names the particular Devadatta, 'bring' names the action of bringing, and 'cow' names the universal cowness. Each of these words is capable of designating its meaning in isolation, and thus its semantic contribution to a sentence is invariant across sentences. To understand the meaning of a sentence we merely assemble the meanings of the constituent words to form a complex. Thus the sentence, 'Devadatta brings the cow', designates or means the state of affairs, Devadatta bringing the cow. This theory is clearly motivated by the composition principle.

The related designation theory[10] is the Prābhākara view on sentence comprehension. This view has it that the meaning of a word as occurring in a sentence is some one entity in relation to the entities

designated by the other words of that sentence. Thus the word 'bring' in the sentence, 'Bring the cow', designates the action of bringing in relation to the cow. This view is, I think, best seen as an attempt at constructing a theory of sentence comprehension which does justice to the context and composition principles alike. In accordance with the principle of composition, it is asserted that words do have meanings, and that the meaning of a sentence is determined by the meanings of its component words. But in consonance with the context principle, the theory claims that words do not have meaning in isolation but only when used in sentences. This can be seen from the fact that, for the Prābhākaras, the meaning of a word is its designatum or referent. Since a word can, on this view, complete its designative function only when the relata are brought to mind by the other words in a sentence, it follows that a word cannot be said to have meaning in isolation. These points should become clearer through an examination of some of the arguments for and against the related designation theory.[11]

The principal Prābhākara argument against the pure sentence theory is a variant on the 'infinite resources, finite capacity' strategy more recently used by Chomsky. Consider the eight sentences obtained by inserting the names 'Śiśa', 'Vatsa', 'Arbhaka', and 'Dimbha' into the sentence frames, '___ bring the cow' and '___ tie the cow'. Since these are eight distinct sentences, the sentence theorist must say that in order to understand them, one must master eight distinct designative powers. (A designative power is the capacity of an utterance-type to designate its referent.) If one allows that words have meanings, however, then since these sentences are composed out of seven words (the definite article is not employed in the Sanskrit equivalent), understanding the sentences requires mastery of only seven designative powers. Moreover, we can produce eight new sentences by inserting 'white' before 'cow' in each of the original eight. The sentence theorist will then need 16 designative powers where a word theorist such as the Prābhākara needs only eight. Similarly, the sentence theorist is forced to deny the existence of any semantic relation between a sentence and its negation. In general it is argued that if we neglect the composition principle and thus deny that words play a semantic role in understanding sentences, the ability of the competent speaker to understand a very large class of sentences becomes virtually inexplicable.[12]

A chief Prābhākara objection to the designated relation theory is

that this theory does not yield any natural explanation of a central feature of sentence meaning – that the meaning of a sentence is a unified relational complex. It is assumed, of course, that the meaning of a sentence is whatever a sentence designates; and Indian philosophers have generally taken the designatum of a sentence to be a state of affairs. Now a state of affairs is complex, consisting of two or more entities. But the entities which make up a state of affairs all stand in thoroughgoing interrelation. Thus if a sentence is to be said to designate a state of affairs, it must be capable of presenting the constituent entities not merely as a set of objects but as a unified relational complex.

The Prābhākaras use this claim – which we might call the relational unity thesis – against the designated relation theory in the following way. The latter theory involves the claim that a word has meaning in isolation – that it is capable of designating its referent apart from any sentential context. But this must mean that a word presents its meaning as an independent, unrelated entity. It would seem to follow, then, that on the designated relation theory the meaning of a sentence is just a collection of independent entities. The composition principle taken alone leads us into conflict with the relational unity thesis in that the composition principle seems to require that the meaning of a sentence be a function just of the meanings of its words. The result, as one author puts it, is that a sentence meaning becomes nothing more than a row of stakes. But surely there is all the difference in the world between a sentence and a list of names.

That the designated relation theorists perceived and sought to overcome this difficulty in their position is shown by the very name of their theory. The theory is so called because it asserts that sentence meaning is obtained through the relation of those entities designated by the component words. Its proponents employed various means to try to show how a string of words with independent meanings could give rise to apprehension of a unified relational complex. The basic Prābhākara strategy in attacking these proposals is to try to show that nothing other than the words themselves can perform the function of presenting the relational component of sentence meaning. For instance, it is clear that the independent entities supposedly designated by the words cannot themselves cause us to apprehend their interrelations. If we perceive at three successive moments a patch of white, a neighing sound, and a certain odor, the color, sound and smell do

not themselves cause us to apprehend their interrelatedness in a white, smelly horse. Nor could we say that words somehow endow their independent referents with the capacity to cause apprehension of relation. For instance, some designated relation theorists say that speaker's intention endows the designatum with the capacity to bring about cognition of relation. But this really amounts to saying that a speaker uses a word with the intention of designating some entity in relation to other entities. And that is tantamount to saying that the meaning of a word is just some one entity in relation to others. Again, other designated relation theorists claim that we go from independent entity to entity in relation by a kind of metaphorical transfer: A word directly designates an entity and secondarily or metaphorically implies that entity in relation to other entities. But, it is replied, the metaphorical use of a term is always exceptional: If we as a rule use a term to convey some meaning, that meaning must be its literal meaning, not its metaphorical meaning. And since we as a rule use words to designate entities in relation, the relational component must be part of the literal meaning of a word. The designatum of a word can only be some entity in relation to those entities designated by the other words in a sentence.

While the Prābhākaras make extensive use of the relational unity thesis as a way of motivating their related designation theory, they also display an underlying concern with the issue of what it means to say that one knows the meaning of a word. Thus against the designated relation theorist's claim that word meanings may be learned ostensively, they propose the following account of language learning. The child, by observing competent speakers uttering and obeying various injunctions, learns that the meaning of an injunction is the action which is designated by that injunction. Thus it will learn that the meaning of, e.g., 'Devadatta, bring the cow', is the action of Devadatta bringing the cow. When the child has mastered a sufficient stock of sentences, it proceeds to the level of word meaning through the processes of inclusion and exclusion. Suppose we have mastered the meaning of these four sentences:

(1) Bring the cow.
(2) Bring the horse.
(3) Tie the cow.
(4) Tie the horse.

We notice that (1) differs from (2) just in the presence or absence of 'cow' from the sentence frame, 'Bring the ___'. Thus we hypothesize that the meaning of 'cow' will be that which is present in the satisfaction conditions of (1) and absent from the satisfaction conditions of (2). And similarly with (3) and (4). Our hypothesis is then confirmed when we notice how the presence of 'cow' in the distinct sentence frames, 'Bring the ___'. and 'Tie the ___' affects the satisfaction conditions of (1) and (3) respectively. That is, we discover the meaning of a word by noting how its exclusion from a given sentence frame and its inclusion in distinct sentence frames affect sentence meaning.

It might be thought that the process of inclusion and exclusion will lead us to the conclusion that 'cow' means cowness. This is wrong, according to the Prābhākara. Comparison of (1) and (2) justifies our saying that in (1) 'cow' designates cowness in relation to bringing. Comparison of (3) and (4) justifies our saying that in (3) 'cow' designates cowness in relation to tying. But comparison of (1) and (3) does not justify our saying that in general 'cow' designates cowness. The closest we can come to specifying what is common to the meanings of 'cow' in (1) and (3) is cownessR___. But since there is no such entity as a binary relation with only one relatum, we cannot say that the designatum of 'cow' is cownessR___. We are thus forced to say that the meaning of 'cow' is cowness in relation to those entities designated by the other words in a sentence in which 'cow' occurs. And, it is worth noting that the same considerations apply to proper names as well.

While this is not expressly articulated, it seems that the underlying principle which the Prābhākaras have in mind here is that we do not know the meaning of a word unless we know how it is employed. We use words in the performance of a variety of linguistic actions, but these actions are in general performed only through the utterance of sentences. Thus we discover the meaning of a word only by investigating the semantic contribution it makes to the various sentences in which it occurs. While ostension might serve in some cases as an effective means of *preparing* for teaching the meaning of a word, it can never by itself bring about mastery of semantic role. We can learn to associate the phoneme-sequence 'Devadatta' with the person Devadatta through ostension. But the novice language learner will learn the use of 'Devadatta' – to bring about actions performed by Devadatta, to designate states of affairs in which Devadatta parti-

cipates, etc. – only through exposure to various sentences in which the word occurs. We may, of course, use ostension to introduce new proper names into the lexicon of a competent speaker. But this is possible only because the competent speaker already understands the semantic role of a proper name (to designate a person in relation to entities designated by other words in a sentence in which the name occurs) and understands the convention governing ostension as a means of introducing proper names. The availability of such linguistic shortcuts merely obscures the fact that part of the meaning of a word is just the semantic role it plays in the various sentences in which it occurs.[13]

One stock objection to the related designation theory is the infinite correlates objection. A cow may be designated in relation to any one of a large number of entities: such actions as bringing, tying, and milking, such properties as white and fat, such substances as a barn and a field, etc. Moreover, a cow may be indirectly related, by way of those entities with which it enters into direct relations, with yet more entities: with Devadatta through relation with bringing, with vision through relation with white, etc. In each such case the cow is capable of being designated as related, through relation with its direct relatum, with any of its indirect relata. Clearly, then, the cow is capable of being designated as participating in an indefinitely large, and possibly infinite, number of relational complexes. Now each such relational complex is a distinct entity. But the word 'cow' must be capable of designating a cow as participating in each of these complexes. Hence 'cow' must have an indefinitely large number of distinct meanings. In this case it is impossible to understand how we are able to comprehend novel sentences containing 'cow'.

The Prābhākara answers this objection in the following fashion. Suppose that we have mastered the use of 'cow' and 'goat' in such environments as, 'Bring the ——', 'Feed the ——', 'The —— is white', etc. We also know the meaning of 'Milk the cow,' but have not previously encountered the sentence, 'Milk the goat.' Now the context principle, when taken in conjunction with the realist scruples of the Prābhākaras, precludes us from saying that we know in advance the meaning of 'goat' in this sentence. For here 'goat' designates a goat in relation to milking, and by hypothesis we have not previously encountered a case of the word's being used to designate a goat in relation to milking. This does not mean that we shall fail to understand the

sentence, however. Through our mastery of 'goat' in different sentences, we have come to associate the word with what is called its own-form or own-meaning, goatness. This own-meaning is apprehended in what is described as a type of nonpropositional cognition, which is akin to the immediate perceptual apprehension of goatness. This is not yet apprehension of meaning, however; for this, a further stage is required. We recollect that 'goat' has been previously used to designate a goat in relation to bringing, a goat in relation to white, a goat in relation to Devadatta, etc. Thus we know that 'goat' here will be used to designate a goat in relation to whatever is designated by the other words in the sentence. That is, memory informs us that 'goat' has always been used in the past to designate a goat in relation to some entity or complex of entities, namely whatever was designated by the other words of the sentences in which it occurred. We are thus led to suppose that 'goat' is likewise here being used to present goatness together with its relation to whatever is presented by the rest of the words of the sentence. And we proceed in this fashion until we have obtained the meaning of the novel sentence as a whole.

It is here that we can discern at least implicit acceptance of the sense-reference distinction. The Prābhākaras never actually claim that word meaning has two distinct components; for them the meaning of a word is just that related entity a word denotes when used in a sentence. However, in distinguishing between the own-meaning of a word and the meaning of that word as used in a sentence, they are on the threshold of such a distinction. The point of the infinite correlates objection is that the semantic contribution of a word to sentences must have at least some common core that is invariant across different sentences. In accepting the composition principle, the Prābhākaras are committed to this claim. Now one possible candidate for the role of this common core is a Fregean unsaturated entity, but the Prābhākaras would reject such a solution for two reasons. First, their ontology does not allow for the existence of a binary relation with only one relatum, e.g., cownessR____. Second, the relation which obtains between cowness and milking in 'Milk the cow', is a different relation than that which obtains between cowness and white in 'The cow is white.' Thus it appears that only the entity itself in its unrelated state can play this role. But merely to associate this entity with a word is not to understand the meaning of the word, for word meaning also includes a word's contribution to sentential unity, and this contribution will vary

across sentences. The Prābhākaras put this point in terms of their distinction between the non-propositional cognition of a word's own-meaning and the recollection of the word's previous uses to designate that entity in relation to other entities. This is just the distinction between mere associative knowledge and propositional knowledge that is characteristic of the sense-reference distinction.

Of course it seems implausible to suppose that in order to understand the use of a word in a novel sentence one must literally recollect and run through previously understood uses of that word in different sentences. If this is what the Prābhākaras are claiming, they are mistaken. A more charitable reading would have them saying only that to explain sentence comprehension we must ascribe to the competent speaker not just the ability to associate word with own-meaning but also the propositional knowledge that the word is used to designate that entity in relation to other entities. That is, this psychological model, which has the speaker recalling previous uses and thereby realizing that the word designates an entity in relation, is merely to be taken as a way of emphasizing the point that propositional knowledge must be invoked to explain speaker behavior. If this is what the Prābhākaras are saying, then they are surely right. While the ability to associate 'goat' with goatness can be explained in terms of purely neural machinery, the ability to understand 'goat' in a novel sentence, requiring as it does the ability to seek those other entities to which it is asserted to be in relation, cannot be explained without invoking propositional attitudes. The Prābhākaras say that upon hearing the first word in a sentence one grasps its own-meaning as 'related in general, unrelated in particular'. By this they mean that one grasps that the own-meaning is related to the entities designated by the other words of the sentence, *whatever those entities might be*. Here the occurrence of the variable in a tipoff: While the speaker might be said to be related de re to goatness, his relation to goatnessRx, with variable x, can only be propositional. Indeed the thrust of the infinite correlates objection was precisely that one cannot have knowledge *of* the infinitely many relational complexes into which goatness can be asserted to enter. The Prābhākara answer is just that one can nonetheless be said to know all of these complexes, namely by way of knowledge that the general sentence, 'The meaning of "goat" is goatnessRx' is true.[14]

Thus the Prābhākaras have, albeit unwittingly, introduced a new

motivation for positing senses. It should be pointed out that these are very austere senses indeed, and far from full-blown Fregean senses; they do not, for instance, help solve the informativeness puzzle. Their theory does, however, give added weight to the claim that proper names have senses. And it also yields what I think is a better way of arguing for the sense-reference distinction as applied to predicative expressions than that supplied by Frege.

Frege seems to have thought it would be odd if that which determines the truth-value of a sentence is not something in the world; and since predicative expressions help determine the truth-values of the sentences in which they occur, they, like singular terms, must denote something in the world. This is quite uncontroversial; the difficulty arises over Frege's further claim that such expressions denote incomplete or unsaturated entities, these being said to be the referents of predicates in just the way that the bearer of a proper name is said to be the name's referent. This is objected to on the grounds that unsaturated entities are ontologically queer, and that their posit is unnecessary given that the role of denotatum can be filled by the extension of a predicate. A deeper objection, though, would be that this involves unnecessary duplication of effort: The notion of incompleteness was originally brought in to help solve the problem of sentential unity, but that problem was solved by Frege at the level of sense. Is it really clear that the problem has an analogue at the level of reference? Dummett takes Frege to have been seeking, with his doctrine of unsaturated entities, a way around the problem of explaining the relation between universal and particular;[15] but it can be questioned whether solving this problem is a job for semantics.

The Prābhākaras would be among those who find unsaturated entities ontologically queer, but their potential contribution to the debate over the meanings of predicative expressions goes much deeper than this. Their theory requires that the meaning of any word have two components: the own-meaning, an object that can be grasped in nonpropositional cognition; and that which they consider to be the actual meaning of a word, the own-meaning in relation to other objects. Now the requirement that the own-meaning be the sort of thing that can be grasped in nonpropositional cognition means that it must be possible to apprehend it independently of any relations it might bear to other objects. This requirement is motivated by the fact that the infinite correlates objection cannot be answered in a way that

is consonant with the composition principle unless there is some one entity that can be grasped, independently of relational ties with other entities, as the core meaning of a word. Any number of entities could play this role in the case of predicative expressions: universals, properties, and perhaps even unsaturated entities if they are the sort of thing that can be grasped directly, without the mediation of a propositional attitude. Provided this basic requirement has been met, the related designation theory is, I think, itself neutral on the question of what type of entity the own-meaning or referent of a predicative expression is. What it does require is that a predicative expression have, in addition to its sense, the ability to pick out some one entity as its own-meaning. This is tantamount to distinguishing between the sense and the reference of a predicative expression.

NOTES

[1] John J. McDowell: 'On the Sense and Reference of a Proper Name,' *Mind* **LXXVI**, 159–85.

[2] The contrast I have in mind here is this: One's dog may come to associate the name 'Emily' with Emily, and in this sense may be said to know who Emily is; but one's dog cannot be said to have the knowledge that 'Emily' denotes Emily, or that 'Emily' denotes the smallest adult Abyssinian in Bloomington, etc.

[3] *The Pramāṇavārttikam of Dharmakīrti* (hereafter PV), Raniero Gnoli (ed.), Istituto Italiano per il Medio od Estremo Oriente, Rome, 1960.

[4] PV, p. 25.

[5] PV, p. 25.

[6] Compare David Kaplan's account of a Fregean theory of demonstrations in, 'Demonstratives', unpublished typescript, 1977, pp. 36–39.

[7] Nathan U. Salmon: 1979, 'Review of Leonard Linsky, *Names and Descriptions*', *Journal of Philosophy* **76**, 436–52.

[8] It should be clear that the *apoha* theory also yields a solution to the informativeness puzzle when it is couched (as Frege couched it) in terms of proper names. Several centuries after Dharmakīrti his Tibetan Buddhist successors formulated the problem in just this way and used the approach I have described here to solve it. This is discussed in a paper by Tom Tillemans, 'Identity and Opacity of Reference in Tibetan Buddhist Logic', which was presented at the fifth annual conference of the International Association of Buddhist Studies, Oxford, August 1982.

[9] In what follows, 'designates' and 'names' will be used as synonymous with 'refers'.

[10] The terms 'related designation' and 'designated relation' are readily confused. The designated relation theory (*abhihitānvayavāda*) is the theory that those things which are designated by the words of a sentence are subsequently placed in relation. The related designation theory (*anvitābhidhānavāda*) is the theory that what is designated by a word in a sentence is already related. Thus the two names can be tied to the respective

theories if 'designated relation' is thought of as the relation of what is already designated, and 'related designation' is thought of as the designation of what is already related.

[11] These are examined in greater detail in my 'The *Prābhākara Mīmāṃsā* Theory of Related Designation', in B. K. Matilal and J. L. Shaw (eds.), *Analytical Philosophy in Comparative Perspective*, Reidel, 1985, pp. 253-297.

[12] In 'Infinite Sets, Unbound Competences, and Models of Mind', *Perception and Cognition*, Minnesota Studies in the Philosophy of Science, vol. 9 (Minneapolis: University of Minnesota Press, 1978), pp. 183–200, Robert Schwartz attacks some recent formulations of the infinite resources, finite capacity argument. Richard Grandy formulates a version of the argument that appears immune to Schwartz' criticism in 'Semantics Intentions and Linguistic Structures', *Notre Dame Journal of Philosophical Logic* **23**, 329–30.

[13] Compare Dummett's linking of the context principle and Frege's endorsement of contextual definition in *Frege: Philosophy of Language*, London: Duckworth, London (1981), p. 496.

[14] There is, of course, a sense in which if one knows that every prime number greater than two is odd, then one knows of each prime number greater than two that it is odd. But this is not a sufficiently strong sense of knowledge de re to satisfy the opponent on his own terms. What he demands is that the speaker be causally related in a cognitively significant but nonconceptual way to each of the infinitely many relational complexes. This demand cannot be satisfied, hence the Prābhākara move to propositional cognition as a way of showing that the speaker does know all these complexes in a way, namely the knowledge-that way. The distinction I am appealing to here is that used by Aristotle to solve the *Meno* paradox of knowledge in *Posterior Analytics* I.1. It is also related to the *de re/de dicto* distinction as drawn by Burge in 'Belief *De Re*', *Journal of Philosophy*, **LXXIV**, 338–62.]

[15] *Frege: Philosophy of Language*, pp. 174–7.

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BHARTṚHARI'S PARADOX*

I

Assuming that many things in our experience and in the world can be named, one may consider whether there are any limits to this process, and whether there are any things which cannot be named. This was a standing question in traditional Indian philosophy, with some schools of thought affirming that everything could be named while others denied it. The affirmative position was especially characteristic of the Nyāya-Vaiśeṣika school:[1]

> "Naiyāyikās are fond of a saying, which is sometimes found at the head of their works: whatever is, is knowable and nameable".

The negative position was characteristic of the Buddhist philosophers and may have been held by others as well. In its most general terms it may be formulated by an existential statement:

Unnameability Thesis: There are some things which are unnameable. While it may be surprising and to some extent counter to commonsense, this unnameability thesis belongs to the theory of language and should be subject to rational inquiry. But perplexities arise as soon as one tries to verify it by positive instances, for any positive instance of the unnameability thesis seems bound to name that which it declares to be unnameable. This is the problem we call "Bhartṛhari's paradox", after the fifth century grammarian and philosopher of language, who clearly enunciated it in his *Vākyapadīya*.

Whether or not Bhartṛhari himself actually held the unnameability thesis is a difficult problem which we shall examine at some length. Some of his remarks at least suggest the unnameability thesis, without definitively committing him to it. Those who have studied the *Vākyapadīya* will perhaps appreciate how studiously noncommittal its author tends to be on matters of philosophical doctrine. In as much as the texts are inconclusive, the most we can do here is to formulate the exegetical problems with as much clarity as present understanding of Bhartṛhari's theory of language seems to permit.

To make the problem vivid to modern readers, we will then introduce

some arguments of our own in favour of the unnameability thesis. To the extent that these arguments provide some support for that thesis, they strengthen the paradox. For it is in the nature of the problem that every argument advanced to support any instance of the unnameability thesis, drives one still more firmly into the paradox. This is one of the most perplexing features of our problem: the stronger those arguments, the more firmly they undercut their own conclusions; for they naturally tend to involve repeated reference to the very things whose unnameability they undertake to establish.

II

In this section we will examine some textual grounds for attributing the unnameability thesis to Bhartṛhari, and weigh these against conflicting interpretations. This examination will leave unresolved problems on both sides. But we hope the discussion will serve to focus the textual issues. In any case it will provide us with several interesting candidates for examples of things which cannot be named. Whether or not Bhartṛhari himself regarded these particular things to be strictly unnameable, he did single them out and seemed to be very well aware of their problematic status in connection with names and other denoting expressions.

Our text consists of the opening verses of the *Sambandhasamuddeśa* (*SS*) which is part of the third chapter of Bhartṛhari's *Vākyapadīya* (*VP*). *VP* is a treatise on Grammar, the science on which the interpretation of the Vedas depends. The topic of *SS* is the power of words to convey their meanings, and one of its themes is the doctrine that this power is no less 'eternal' and 'unchanging' than the Vedic injunctions themselves. In the course of discussing this theme, Bhartṛhari devotes some verses to the problem of using language to speak about its own fundamental powers.

The first verse of our text mentions several things and then comments on 'their relations':[2]

> From words which are uttered, the speakers's idea, an external object and the form of the word itself are understood. Their relation is fixed. (*SS* 1)

This highly comprehensive and so far nameless relation is Bhartṛhari's primary candidate for something unnameable. He explicitly says that it cannot be

signified *in a certain way* (svdharmeṇa = on the basis of a property belonging to it). The main exegetical question is whether or not Bhartṛhari's semantic theory affords any *alternative* way of naming or signifying the relation in question. And, short of a full-scale reconstruction of that theory, as expounded throughout the nearly two thousand verses of the *Vākyapadīya*, it seems to be very difficult to settle that question in any definitive way. The problem is compounded by several difficulties of reconsiling Bhartṛhari's linguistic practice with his own linguistic theory. For he uses various linguistic devices to identify and denote the relation in question; and it is by no means clear how his own linguistic theory could accommodate some of those devices.

The relation in question connects 'words' with 'meanings', where each of these two terms covers a heterogenous variety of things. Under 'words' may be included morphemes, words and compounds of various grammatical categories: simple and compound nouns, verbs, particles, prefixes, and so forth.[3] Under 'meaning' may be included individual substances, processes, powers, classes of these things, properties and ideas of any of the foregoing, and perhaps other things as well.[4] To cover this kind of range in English one needs to resort to one of the most general and flexible semantic terms like 'meaning' or 'signification'.

The third verse of our text tells us that the word-meaning relation is closely connected with the genitive case and with something (*vācya-vācaka*) which we render in English as 'significance':[5] The relation between words and meanings is understood by means of the genitive:

> "This is the signifier (*vācaka*) of that;
> that is the signified (*vācya*) of this."
> Thus the thatness (*tattvam*) of the relation is signified. (*SS* 3)

We cannot give a full account of this relation, and above all it should not be hastily identified with any modern counterpart from philosophical or commonsense semantics. We have chosen the word 'signifies' as a placeholder for a very comprehensive semantic relation whose content could be gradually unfolded by developing Bhartṛhari's full theory of language in its surrounding philosophical framework. The main thing for present purposes is to observe that the same Sanskrit term (*vācakam*) recurs in the next verse, modifying the term 'expression' (*abhidhānam*):[6]

> Of the relation there is no signifying expression (*vācakam abhidhānam*) on the basis of a property belonging to it. (*SS* 4a)

Now we want to examine the logical bearing of this verse on the proposition:

B1 *The significance relation is unnameable*

which is an instance of the unnameability thesis. There are several differences of wording between *B1* and the textual passage *SS 4a*, and the exegetical problem is whether or not the passage, taken in the larger context of Bhartṛhari's semantic theory, implies *B1*. We will comment on each of three points of difference.

In the first place, *B1* explicitly identifies "the relation" mentioned in *SS 4a* as the signifier-signified relation, under discussion in these verses of *SS*. The text is quite clear on this point and we do not regard it as controversial.

In the second place, B1 has 'name' where SS 4a has 'signifying expression'. Given the very comprehensive character of the signifying relation, it is natural to regard names as a special kind of signifying expression. For our purposes, the most prominent distinguishing feature of names is their grammatical status as singular nouns or singular nounphrases. On this usage one would not regard prepositions, suffixes or verbs as names of what they signify. We shall provisionally regard singular pronouns and demonstratives as names, on the understanding that this treatment is eminently open to revision.

In the third place, *B1* omits the qualifying phrase 'on the basis of a property belonging to it'. The justifying argument for this omission would be that the phrase in question is not understood in context as a restrictive qualification, for in Bhartṛhari's semantics all naming is 'on the basis of a property'. Thus *VP* III.14.274 states that words have no application without 'occasioning grounds'; and other passages suggest that even proper names and perhaps demonstratives as well denote through some fixed or contextually determined individuating property.[7]

The last of these points is one of the most important in evaluating the claim that *SS 4a* in its textual context implies *B1*. If Bhartṛhari's semantics could accommodate names with some mode of significance other than that 'on the basis of a property', then *SS 4a* would not commit Bhartṛhari to the unnameability thesis. But we have not been able to find any direct evidence that he did admit names with any alternative mode of significance. Could there be some indirect evidence?

One might look for indirect evidence in Bhartṛhari's own linguistic practice. He uses various Sanskrit expressions to introduce the significance relation and identify it to his readers. The first verse of our text introduces it as *teṣām saṃbandhaḥ* (their relation), the third verse calls it *yogaḥ śabdārthayoḥ* (the relation of word and meaning), and so on. These are nominal expressions and so may be classified as names in our broad sense, which are *prima facie* counterexamples to *B1*. And so, the argument would run, had Bhartṛhari been committed to *B1* in full strength, and not merely to the weaker proposition *SS 4a* he would have been committed to a principle which is inconsistent with his own linguistic practice. Therefore, the argument continues, one should regard the phrase 'on the basis of a property (etc.)' as a restrictive clause, and construe the various names Bhartṛhari uses for the significance relation, as names which signify on some other basis.

This indirect argument against attributing *B1* to Bhartṛhari, cannot be dismissed lightly. But a fuller reflection will show that it cannot be taken to be decisive either. In the first place at least one other verse of our text apparently implies an unqualified instance of the unnameability thesis, in connection with the inherence relation:[8]

> The relation called inherence, which extends beyond the signifying function (vācyadharmātivartinī) cannot be understood through words either by the speaker or by the person to whom the speech is addressed. (*SS* 19)

Helārāja's commentary on this verse ends with the statement: "Therefore it (inherence) is truly unsignifiable (avācya)".[9] This provides some evidence that Bhartṛhari was committed to:

B2. *The inherence relation is unnameable*

Since the text supporting *B2* makes no reference to properties as the basis of naming, the indirect argument advanced against *B1* would not apply here in the same form.

We are well aware that some new indirect argument might be advanced against *B2*, once more on the basis of a conflict between principles and practice. For Bhartṛhari does use the word *samavāya* throughout to name that which *B2* declares to be unnameable. And so, the new indirect argument might run, had Bhartṛhari been committed to *B2* in full strength, and not

merely to some weaker proposition, he would have been committed to a principle which was inconsistent with his own linguistic practice.

We are now in a position to recognize the ground of these indirect arguments in the very phenomenon of Bhartṛhari's paradox. According to that paradox, any statement of any instance of the unnameability thesis is bound to use some name or expression to identify that which it declares to be unnameable. So any statement of any such principle seems bound to conflict with linguistic practice at some point. The very inevitability of such a conflict to some extent weakens these indirect arguments and justifies a demand for textual evidence of a more direct kind. One cannot rule out the possibility that Bhartṛhari really did hold some instance of the unnameability thesis and thereby really was committed to a linguistic theory which he himself couldn't reconcile with his own linguistic practice. That would after all be poetic justice for the author of our paradox.

Some remarks of Helārāja suggest yet another reading of Bhartṛhari's position on the unnameability thesis. The commentary to the fourth verse of *SS* in effect treats the genitive locution as if it were an *exception* to the rule:[10]

> . . . There, apart from the genitive locutions, there is no signifying, that is, elucidating, expression for it . . .

and Subramania Iyer's translation of Bhartṛhari's verse incorporates this reading:[11]

> There is no verbal element (besides the genitive suffix) which denotes this relation in its essential property.

by interpolating the parenthetic phrase although it does not appear explicitly in the Sanskrit text. Helārāja's reading would provide one more way of detaching the verse SS 4a from the special unnameability thesis *B1*.

It is our view, however, that a closer examination of the genitive locutions in question will make it clear why they are not exceptions to *B1*. There is a matched pair of these genitive locutions. One describes a certain demonstrated word (this) as a *vācaka*, and the other describes a certain demonstrated meaning (that) as a *vācya*:

i. This is the signifier of that
ii. That is the signfied of this

Each has the grammatical structure: demonstrative + copula + singular nounphrase, or in our provisionally simplified terminology: name + copula + name.[12] Four names are involved:

a.	this (word)	*c.*	the signifier of that
b.	that (meaning)	*d.*	the signified of that

and inspection will show that none of them names the significance (*vācya-vācaka*) relation. Two of them (*a* and *c*) name a certain *word*, and the other two (*b* and *d*) name a certain *meaning*, or thing signified. So the constituent names of (i) and (ii) name arguments ("relata") of the relation in question. Two of them (*c* and *d*) are names of that special sort which in traditional grammar were called 'relative terms': they denote some thing by reference to the relation it bears to something else. The relation figures in the process of understanding those relative terms, but not as denoted or named by those terms.

This analysis may help us to sharpen the contrast between what *SS*3 says that the genitive locution *can* signify, and what *SS*4 says that locutions in general *cannot* signify. What the genitive locution signifies, according to the last clause of *SS*3, is something connected with the significance relation (its 'thatness'), not the relation itself. In lieu of a full account of what Bhartṛhari meant by 'thatness' (*tattvam*), we offer the following interpretation of the way it applies to the case at hand: the 'thatness' of a relation resides in its concrete manifestations, the particular individuals which stand in that relation to one another – in short, its arguments.

To justify this interpretation one need look no further than the genitive locutions offered by Bhartṛhari to signify 'the *tattvam* of the relation'. These locutions in fact name a particular argument, or pair of arguments, of the significance relation: a particular word (*vācaka*) and its meaning (*vācya*). From the standpoint of grammatical analysis this is very different from naming a relation in which those particular individuals stand, even when the names employed for those individuals are relative terms. From the standpoint of logical analysis, a relation is ontologically distinct from any pair of its arguments, and naming the one is a different matter from naming the other. A given word can stand in various relations to different things: it can be a *vācaka* of one thing, a synonym of another and an antonym of a third. And yet significance, synonymy and antonymy are obviously three distinct relations. In the present context there is another logical difference

of considerable importance. In Section IV we will examine some logical reasons why the naming relation cannot be named; but these reason clearly do not carry over to the particular names which are among the arguments of that relation. Nor do they carry over to the particular individuals which bear those names and are the remaining arguments of that relation. They can of course be named, by using their individual names. Logical problems arise only in connection with naming the naming relation itself; and this highlights a rather striking contrast between the logical status of a relation and that of its arguments.

From both a grammatical and a logical standpoint then, we can see how Bhartṛhari might state in one verse that the genitive locution signifies the thatness of the significance relation, and in the very next verse deny that any expression can signify that relation. So we find no reason to regard the genitive locutions as exceptions to the unnameability thesis, and we conclude our examination of the claim that Bhartṛhari held that thesis and asserted *B1* as an instance of it.

III

Enough has been said to indicate the complexity of the exegetical problems surrounding the question of the strength of Bhartṛhari's commitment to the unnameability thesis. His statement of the paradox is perhaps somewhat less problematic, at least to the extent that he presents it unmistakably and without qualifications. Several consecutive passages in our text clearly testify to Bhartṛhari's awareness of the paradoxical character of instances of the unnameability thesis. Following his statement that inherence 'cannot be understood through words', Bhartṛhari writes:[13]

> That which is signified as unsignifiable, if determined to have been signified through that unsignifiability, would then be signifiable. (*SS* 20)
>
> If (the word) 'unsignifiable' is being understood as not signifying anything, then its intended state has not been achieved. (*SS* 21)
>
> Of something which is being declared unsignifiable that condition (of being signifiable) cannot really be denied by those words, in that place, in that way, nor in another way, nor in any way. (*SS* 22)

These verses address themselves to some statement like:

B3. *The inherence relation is unsignifiable*

and treat of the mode of significance of the predicate of that sentence (*'avācyam'* = 'unsignifiable'). We take them as offering an explanation of the paradoxical character of statements like *B3*.

To obtain a somewhat sharper view of the paradox, attention must also be paid to the subject terms of such statements; *B3* is self-refuting on account of an opposition between its subject and predicate terms. In order for *B3* to be true, its subject term must signify something, and its predicate term must be true of that thing; so its subject term must signify some unsignifiable thing. Because that condition cannot be satisfied, *B3* cannot be true. By a parallel line of reasoning, neither *B1* nor *B2* could be true, and perhaps more generally one might conclude that no instance of the unnameability thesis could be true.

In our view the very fact that Bhartṛhari devoted several verses to such a careful formulation of the paradox, covering all cases ("not . . . in that way, nor in another way, nor in any way"), shows that the unnameability thesis or some variant of its was at least under serious consideration at that point in his discussion. But Helārāja's commentary to these verses brings out an exegetical problem on a different plane from those we have so far considered. We will call this the problem of *attribution*.

The exegetical problems discussed in Section II concerned matters of explication of the content, understood in context, of several propositions in the text. But one need not assume that Bhartṛhari intended to *assert* every proposition contained in those verses. Some he may have been simply entertaining in the course of developing his position or arguing for it. Among these latter may be propositions he was voicing on behalf of others, as *objections* or *criticisms* to be answered; and so forth.

This general problem of attribution which is familiar to Bhartṛhari scholars, interacts with the semantic problems of elucidation in a very tangible way, inasmuch as one's interpretation of a particular passage "in context" depends on one's understanding of Bhartṛhari's overall theory of language, which in turn is woven out of various propositions one attributes to Bhartṛhari from the passages in his text. We have illustrated this interaction in the previous section in the course of examining Bhartṛhari's commitment to the unnameability thesis. By and large, however, the emphasis there was

on matters of elucidation. In this section, matters of attribution come into prominence. The content of the Verses 20 to 22 seems to us relatively unproblematic in comparison with various matters concerning their role in the discourse. Whether Bhartṛhari should be taken as having asserted those propositions or merely as having voiced them on behalf of others, is a problem too complex to be resolved here.

It was Helārāja's view that the propositions expressed in Verses 20 to 22 of *SS*, making up what we have called Bhartṛhari's paradox, were not asserted by Bhartṛhari but were merely voiced on behalf of certain actual or potential critics. In his commentary to Verse 23, Helārāja describes the preceding three verses as "Naiyāyikā casuistry" (*vākchala*), and he describes the subsequent verses as "an answer" to them.[14] Our own view is that those verses cannot be dismissed as 'casuistry', however the problem of attribution is ultimately decided. There seems to us to be a genuine paradox here, which offers no easy way out. This will be argued in the next two sections.

IV

We have put before ourselves two instances of the unnameability thesis, concerning two fundamental semantic relations: significance (*B1*) and inherence (*B2*). One passage of the text states that thest two relations are distinct ("inherence . . . extends beyond the signifying function" (*SS 19*)) and another passage states that they are closely interconnected (*SS 13*). Without trying to work out the exact connections between them, we have examined with some care the textual basis for each of these two instances of the unnameability thesis. Now we propose to move the discussion to a more analytical level on which we will begin to open for ourselves the question of the unnameability thesis and its grounds in the structure of language. In this section we will follow what we take to be Bhartṛhari's insights, but deal with them using analytical resources beyond those that were available to Bhartṛhari.

Examining the unnameability thesis as a contemporary issue in the philosophy of language, we believe that thesis can be supported by some arguments of rather considerable strength and generality. We will present these arguments informally at first, making use of commonsense notions. Then they will be related to modern ideas from the theory of sets, with the aim of making the arguments more rigorous. No historical claims should be

read into the discussion of this section. Its purpose is to examine Bhartṛhari's paradox as a living problem, and in the process to make an effort to crystallize from it the sharpest possible formulation.

The proposition that the significance relation is unnameable can most easily and directly be derived from a still more general proposition:

R1. *The significance relation is unsignifiable*

What this means in the context of the present paper is that there is no expression, of any grammatical category, which bears the significance relation to the significance relation. Equivalently: the *vācya-vācaka* relation has no *vācaka*, and is not itself a *vācya*. Once unsignifiability of the relation has been established, its unnameability will follow as a special case.

We will now sketch a *proof* for *R1* from the still more general proposition that no relation can be one of its own relata. If this holds for all relations, it holds for the significance relation as a special case (*R1*); and from that special case, *B1* would follow as a still more special case.

To build up some intuition concerning the problem, consider the naming relation, which obtains between names and their bearers: between the name 'Krishna' and the playful blue god, between the name 'Gauriśankar' and the highest mountain on earth, and so forth. It takes its place as one relation among others: the parent-child relation among humans, the dominance relation within a herd of elephants, the natural ordering relation of the positive integers. In general there is no semantic problem about naming various relations: we fix the relation in our mind and then discover or invent some name for it. However a specific problem does arise in the case of the naming relation itself. The first step presents no difficulty; we can fix the relation as an object of thought. Nor is there any obstacle to selecting a name; on the contrary, various languages incorporate several syntactic devices capable of forming names of relations. In the first place one can specify the characteristic domain and counterdomain of the relation, as in forming the name 'the parent-child relation'. Secondly one can nominalize one of the verb-forms which express the relation, as in forming the name 'the dominance relation' from the transitive verb 'dominates'. Thirdly one can find a uniquely descriptive phrase, as in forming the name 'the natural ordering relation among the positive integers' for the relation $\geqslant$.

Having fixed the relation as an object of thought, and having selected one or another suitable expression to name it, the only thing left would be tying

the two together within the naming relation. And the last step is the hardest, for in the special case at hand, one is called upon to make a relation one of its own relata; and this almost invariably binds one in a conceptual knot. The parent-child relation is neither a parent nor a child; no elephant dominates the dominance relation; no number is greater than or less than the natural ordering relation among the positive integers. Nor does this seem to be an historical accident of classification or usage. How could it be otherwise? How could *any* relation be one of its own relata?

To sharpen this question a bit, let us consider a parallel question that has received much attention in the theory of sets: could any set be a member of itself? As Bertrand Russell observed at the beginning of the century, sets are not ordinarily members of themselves; but there might be thought to be some extraordinary sets which are members of themselves.[15] Let us consider this possibility. The set of all mangoes is certainly not itself a mango; but then, the set of all things which are not mangoes isn't a mango either, and so it does or 'should' belong to itself. This line of thought leads directly into what is known as Russell's antimony concerning the set of all sets which are not members of themselves. In order to resolve this and allied antinomies, standard axiomatic set-theories deny the existence of any sets which are members of themselves. In accordance with those theories, there is no set of all things which are not mangoes; for it there were, *per impossibile* it would have to be a member of itself.

The problem of sets being members of themselves is only part of a larger problem, and the set theories in question have been framed in such a way as to preclude the existence of any set which is a member of itself once removed (i.e. a member of a member of itself), or a member of itself twice removed, etc. In general, the set-membership relation is required to be 'acyclic', by a principle called the *axiom of regularity*.[16]

This doctrine has consequences for our problem as soon as we take into account that every relation has some set of its 'extension': some set of ordered pairs. Let N be the set of all ordered pairs $\langle n,b \rangle$ consisting of a name, n, and the bearer of that name, b. For example, the pair ⟨the name 'Krishna' the playful blue god⟩ belongs to N, as does the pair ⟨the name 'Gauriśankar', the largest mountain on earth⟩, and so forth. The set N is the 'extension' of the proper-name relation. Now the question of whether or not the naming relaion can be named, is connected with the question of whether or not the set N could contain some pair $\langle n,N \rangle$. Such an eventuality would not require

N to be strictly a member of itself, but more precisely would require N to be "part of" a member of itself. According to the usual set-theoretical construal of relations, the ordered pair $\langle n, N\rangle$ would itself be treated as a set of sets.[17] Consequently, the naming relation could be named only if N could be a member twice removed of itself, and this is incompatible with the regularity axiom.[18]

By this reasoning a general theorem about relations can be derived from the standard principles of the mathematical theory of sets:

Regularity Theorem: No relation can be one of its own relata

The label attached to this theorem underscores its reference to some "regular" theory of sets, that is some theory incorporating the axiom of regularity or an equivalent principle.[19]

Without committing ourselves to any special assumptions regarding the nature of language or the naming process, but only to some more fundamental assumptions concerning the nature of sets, a substantial case can now be built up to support the unnameability thesis. In the first place, *R1* is an immediate corollary to the regularity theorem, quite independently of any questions about the exact interpretation or English translation of '*vācya-vācaka*', so long as it is treated as a relation having some regular set for its extension. In the second place, *B1* is a consequence of *R1* assuming only that whatever can be named can be signified.

V

Having approached the unnameability thesis now from more general considerations, it is possible to reinforce our paradox by establishing a whole family of variations on *B1*. As an introduction to those variations, let us reflect briefly on one natural response to the paradox. Up to this point we have used the term "name" in an unusually extended sense, to include proper names, definite descriptions, and even demonstratives. In accordance with this broad usage, one could hardly deny that *B1* contains a name (the phrase 'the significance relation') for that very thing which *B1* declares to be unnameable. Now someone might suggest that what drives one into the paradox is just this policy of using the term "name" in an extended sense.

Consider the alternative policy of restricting the term 'name' to proper nouns like 'Krishna' or 'Gauriśankar'. One way of implementing this policy

might be to use the term "denote" for the more extended concept, so that definite descriptions and demonstratives would be said to denote but not to name that which they signify. Now, taking a closer look at *B1*, we see that under the new policy it would no longer name that which it declares to be unnameable; rather, it would quite legitimately denote that which it declares to be unnameable, and the paradox would be resolved. This line of reasoning may seem to turn Bhartṛhari's paradox as so far discussed into 'casuistry' or some sort of verbal trap constructed out of the extended usage of 'name'. And indeed, common usage may well favour some more restricted usage and thereby offer what seems to be a natural resolution of the problem.

We shall now suggest that no such resolution can be satisfactory, for its apparent success must depend on a very limited view of the whole matter. Any sharply drawn boundary between names and denoting phrases, transfers the paradox from *B1* to:

R2. *The significance relation is undenotable,*

which on the one hand could be derived from the regularity theorem, and on the other hand would – according to the new policy – denote that which it declares to be undenotable. Nor will the drawing of any number of additional boundaries within the field of what we originally called 'names', ever be able to fully resolve the problem.

Furthermore, in the presence of certain minimal assumptions regarding the connections between naming, denoting and signifying, additional consequences can be derived. The regularity theorem can be generalized in several ways. One simple generalization is:

> *Indirect Regularity Theorem*: No relation can be one of the relata for any one of its own subrelations.

The sense here is that if Q is included in R as a subrelation, then R cannot be a relatum for Q. Therefore, under the assumption that naming is a case of denoting which in turn is a case of signifying:

R3. *The significance relation is unnameable.*
R4. *The denoting relation is unnameable.*

In the presence of an additional assumption connecting significance with inherence, *B2* and *B3* can also be derived from the indirect regularity theorem.

The assumption is that signifying is a subrelation of inhering. This assumption is suggested by verse 13 of our text:[20]

> On the basis of the relation of inherence (a word's) own substratum and own universal are understood. On the basis of inherence in a single substratum, on the other hand, the quality which belongs in its own substratum alone is understood. (*SS 13*)

and is consonant with other passages such as "inherence . . . extends beyond the signifying function". (*SS 19*). Conditional upon this assumption and the previous one that naming and denoting are subrelations of signifying, we could derive:

R5. *The inherence relation is unnameable.*
R6. *The inherence relation is undenotable.*
R7. *The inherence relation is unsignifiable.*

These seven special unnameability, undenotability, and unsignifiability results, are just a few examples to illustrate the stability of Bhartṛhari's paradox when it is understood more broadly as a theme with many variations.

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NOTES

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1 See K. Potter, 1977, p. 48. Further discussion is to be found in K. Potter, 1968, which also describes a contradiction having some affinity with Bhartṛhari's paradox, but arising within a rather different philosophical context.

2 jñānaṃ prayoktur bāhyo'rthaḥ svarūpam ca pratīyate /
śabdair uccāritais teṣām saṃbandhaḥ samavasthitaḥ //

Except for the word jñānam which is translated as idea in order to accommodate the complexity read into it by Helārāja, the translation is Subramania Iyer's: Iyer, 1971, p. 76. Unless specifically stated the translations are ours.

3 See, for instance Helārāja's introductory remarks to VP. III.1.1.

[4] See Helārāja's remarks on VP. III.1.2.

[5]

asyāyam vācako vācya iti ṣaṣṭhyā pratīyate /
yogaḥ śabdārthayos tattvam ity ato vyapadiśyate //

[6]

nābhidhānam svadharmeṇa sambandhasyāsti vācakam /

[7] In the *jātisamuddeśa* the property on the basis of which names are given to objects is identified with universals (*jāti*): VP. III.1. 6–8; in the *dravyasamuddeśa* with a limiting feature (*upādhi*): Helārāja on VP. III.2.2, p. 108. 1–9; in the *guṇasamuddeśa* with a quality (*guṇa*): Helārāja on VP. III.5.1, p. 192–203. The lack of a uniform vocabulary is not surprising in the context of Bhartṛhari's commitment to a metaphysically neutral semantic theory. (*sarvapārṣadasāmānyam śāstram*). There is evidence in support of our view that for Bhartṛhari proper names do not name their subjects directly. For instance Helārāja on VP. III.1.2, p. 9.6–7 says: "It will be established that even (proper) names like Ḍittha express universals

(*saṃjñāśabdānām api Ḍitthādiśabdānām jātivācitvaṃ samarthayiṣyate*)",

a remark which is elaborated on by him in Vp. III.5.1, p. 193. 17–20; see also VP. II.366 and the discussion of the proper name Kharaṇasa (long-nosed) in VP. II.364–365. Our evidence for the demonstrative is indirect and is drawn from Bhartṛhari's analysis of negative sentences. The sentence 'This is not a Brahmin' is meaningful if the reference is to someone who bears a resemblance to a Brahmin, to someone who for instance has tawny hair (*pingalakeśin*): see VP. III.14.263, 281, 301. This would seem to suggest that the demonstrative refers to its object through a property which is determined by the adjoining predicate expression. The property would therefore not be fixed (*dhruvam*) but would be context dependent. The demonstrative would signify its object in the same way in which a crow signifies the house on which it sits: VP. III.2.2.

[8]

prāptiṃ tu samavāyākhyām vācyadharmātivartinīm /
prayoktā pratipattā vā na śabdair anugacchati //

[9] *iti avācya eva bhāvato'yam*: Helārāja: on VP. III.3.19. p. 137. 1–2.

[10] *tatra . . . vācakaṃ pratyāyakam, abhidhānam ṣaṣṭhivyatiriktaṃ nāsti*: Helārāja on VP. III.3.4. p. 128–10–11.

[11] Iyer, 1971. p. 80.

[12] Since Sanskrit does not have a copula the sanskrit counterparts for *a–d* have the grammatical structure: demonstrative + implicit verb + noun phase. The four names involved would be:

a. *ayam*
b. *ayam*
c. *asya vācakaḥ*
d. *asya vācyaḥ*

[13]

avācyam iti yad vācyaṃ tad avācyatayā yadā /
vācyam iti avasīyeta vācyam eva tadā bhavet //

athāpy avācyam ity evaṃ na tad vācyaṃ pratīyate /
vivakṣitāsya yāvasthā saiva nādhyavasīyate //

tathānyathā sarvathā ca yasyāvācyatvam ucyate /
tatrāpi naiva sāvasthā taiḥ śabdaiḥ pratiṣidhyate //

[14] Helārāja on VP. III.3.3, p. 138. 12–13.
[15] See B. Russell, 1908.
[16] See P. Suppes, 1960.
[17] The order pair $\langle n, N\rangle$ would be defined as the set $\{\{n\}, \{n, N\}\}$ whose members are the set $\{n\}$ whose only member is n, and the set $\{n, N\}$ whose members are n and N; so it would follow that N would be a member of a member of $\langle n, N\rangle$. See Suppes 1960 (Chapter 2 Definition 10, and also Chapter 3).
[18] What is in question is the proposition that N might be a member of some set $\{n, N\}$ which is a member of $\langle n, N\rangle$ which is a member of N.
[19] It should be remarked that there do exist some rather special axiomatic set theories in which the axiom of regularity does not hold; one well-known example is W. V. Quine's system *NF* ("New Foundations"), described in Quine 1963. These systems show the possibility of operating consistently with nonregular sets; but it is not easy to see how they could provide any intuitively satisfactory resolution for Bhartṛhari's paradox.
[20]
samavāyāt sva ādhāraḥ svā ca jātiḥ pratīyate /
ekārthasamavāyāt tu guṇaḥ svādhāra eva ye //

The substratum or support of a word is that in which universals of the word inhere, the individual token (*śabdavyakti*). See for example VP. III.1.8: *śabdārthasaṃbandhāc śabde jāti vyavastihitā*. See also Helārāja's remarks on SS 13.

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Note: We have used two editions of *Vākyapadīya*. For references to Book III Chapters 1 through 7 (VP. III.1–7), see Iyer 1963: for all other references to VP see Rau, 1977.

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